SVO-1500/1500P
RMT-V139/V139A

SERVICE MANUAL

US Model
Canandian Model
SVO-1500
AEP Model
SVO-1500P

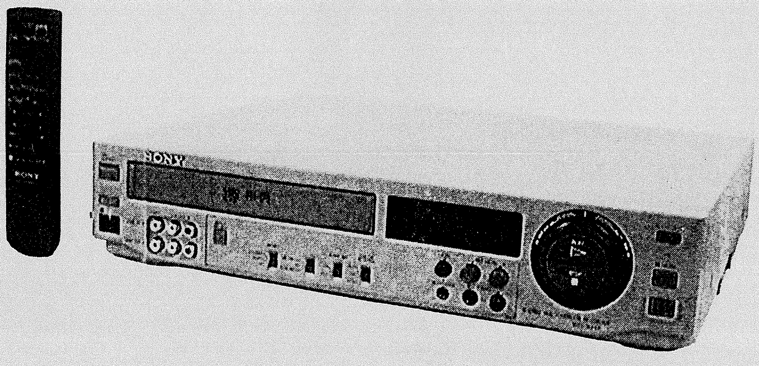

Photo : SVO-1500P

VHS Hi-Fi

- Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS III for MECHANICAL ADJUSTMENTS. (9-973-211-11)

SPECIFICATIONS

System (SVO-1500)

Format	VHS standard
Video recording system	Rotary 2-head helical scanning system
Audio recording system	Hi-Fi
Video signal	NTSC
Tape speed	SP: 33.35 mm/sec. LP: 16.67 mm/sec. (Playback only) EP: 11.12 mm/sec.
Maximum recording time	SP: 120 minutes with T-120 EP: 360 minutes with T-120
Fast-forward and rewind time	Approx. 4 min. 30 sec. (with T-120)
Antenna	75-ohm antenna terminal for VHF/UHF
RF converter output	VHF channels 3 or 4 (selectable)

MAIN Difference portion

Feature	SVO-1500	SVO-1500P
SYSTEM	NTSC	NTSC/PAL
POWER	120 V AC	220 − 240 V AC
REMOTE COMANDER	RMT-V139A	RMT-V139
RF CONVERTER OUT	○	X

System (SVO-1500P)

Format	VHS standard
Video recording system	Rotary 2-head helical scanning system
Audio recording system	Hi-Fi
Video signal	PAL/NTSC
Tape speed	PAL SP: 23.39 mm/sec. LP: 11.70 mm/sec. NTSC SP: 33.35 mm/sec. LP: 16.67 mm/sec. (Playback only) EP: 11.12 mm/sec.
Maximum recording time	PAL SP: 180 minutes with E-180 LP: 360 minutes with E-180 NTSC SP: 120 minutes with T-120 EP: 360 minutes with T-120
Fast-forward and rewind time	Approx. 4 min. 30 sec. (with E-180)

– Continued next page –

MICROFILM

VIDEO CASSETTE RECORDER

SONY®

Inputs and Outputs

LINE IN	VIDEO IN (BNC jack/rear) (1) LINE IN 2 VIDEO (phono jack/front) (1) Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative LINE IN 1/2 AUDIO (phono jacks) (4) Input level: 327 mVrms Input impedance: more than 47 kilohms
LINE OUT	VIDEO OUT (BNC jack/rear) (1) LINE OUT 2 VIDEO (phono jack/front) (1) Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative LINE OUT 1/2 AUDIO (phono jacks) (4) Standard output: 327 mVrms Output impedance: less than 10 kilohms
CONTROL S IN	Minijack (1)
CONTROL S OUT	Minijack (1)
Microphone input	MIC (standard jack) (1) More than 3 kilohms, –53 dBs
Headphone input	Stereo minijack (1) Impedance: more than 8 ohms Output: less than 80 mW

General

Power requirements	120 V AC, 60Hz (SVO-1500) 220–240 V AC, 50/60Hz (SVO-1500P)
Power consumption	19 W
Dimensions	Approx. 430 × 91 × 353 mm (w/h/d)
Mass	Approx. 5.3 kg
Remote control system	Infrared control
Power requirements	3 V DC, two R6 batteries
Dimensions	Approx. 40 x 18 x 175 mm (w/h/d)
Mass	Approx. 59 g (not including batteries)

Accessories supplied

Remote Commander with two R6 (size AA) batteries	(1)
Antenna cable (SVO-1500 only)	(1)
AC power cord	(1)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

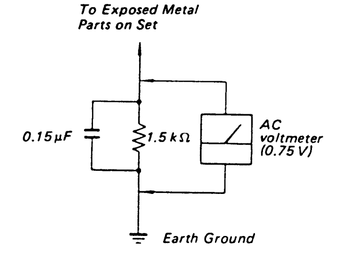

Fig. A. Using an AC voltmeter to check AC leakage.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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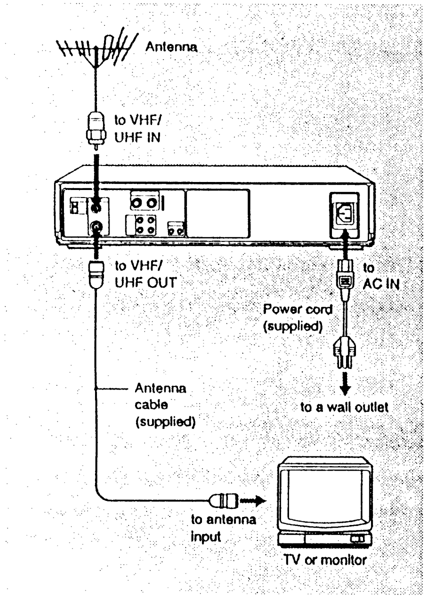
Connections

Turn off the power to all the equipment before making connections. Connect the AC power cord last.

Connecting an Antenna and a TV

To view video pictures as well as TV programs on your TV, connect an antenna and a TV as shown.
Be sure to make the connection firmly, since a loose connection may cause picture distortion.

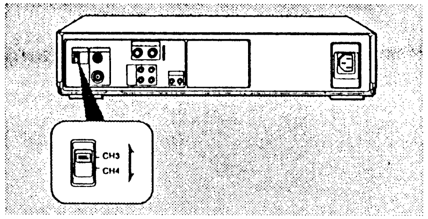

Antenna
to VHF/ UHF IN
to VHF/ UHF OUT
to AC IN
Power cord (supplied)
Antenna cable (supplied)
to a wall outlet
to antenna input
TV or monitor

1 Disconnect the antenna cable from the antenna input terminal on the TV, and connect it to the VHF/UHF IN terminal on this unit.

2 Connect one end of the supplied antenna cable (75-ohm coaxial cable with F-type connectors) to the VHF/UHF OUT terminal on this unit and the other to the antenna input terminal on the TV.

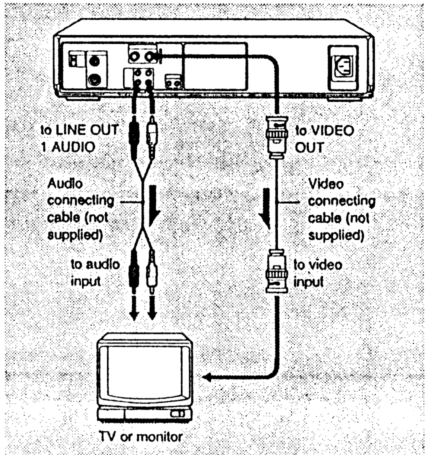
To watch the playback picture of the VCR through this connection

1 Set the RF UNIT selector on the rear to CH3 or CH4. (Set to whichever channel is not used in your area. If both are used, pick up either one.)



2 Select channel 3 or 4, which you have selected with the RF UNIT selector, on the TV.

When your TV is equipped with audio/video input jacks
In addition to the antenna connection, connect the audio/video input jacks on the TV to the LINE OUT 1 AUDIO and VIDEO OUT jacks on this unit. In this way, you can get a picture of higher quality.

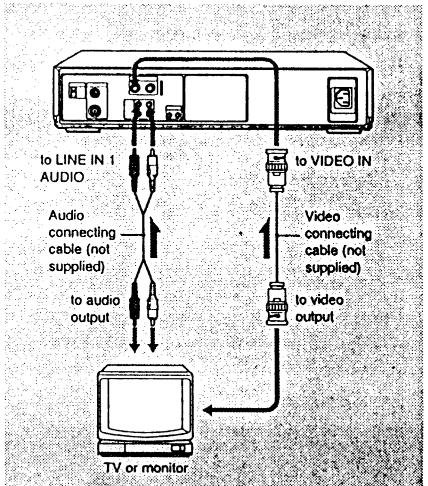

to LINE OUT 1 AUDIO
to VIDEO OUT
Audio connecting cable (not supplied)
Video connecting cable (not supplied)
to audio input
to video input
TV or monitor

- If your TV is a monaural type, use the VMC-910MS/920MS cable (not supplied).

Note that the audio cable plugs and jacks are color coded: Red plugs and jacks are for the right audio channel, and white ones are for the left audio channel.

To watch the playback picture of the VCR through this connection, be sure to select the input for this VCR on the TV.

When your TV is equipped with audio/video output jacks
Since this VCR does not have a built-in tuner, you cannot record TV programs through the VHF/UHF IN terminal. However, if your TV has audio and video output jacks, connect these jacks on the TV to the LINE IN 1 (or 2) AUDIO and VIDEO IN jacks on this VCR. You can record a program showing on the TV through this connection.


to LINE IN 1 AUDIO
to VIDEO IN
Audio connecting cable (not supplied)
Video connecting cable (not supplied)
to audio output
to video output
TV or monitor

- If your TV is a monaural type, use the VMC-910MS/920MS cable (not supplied).

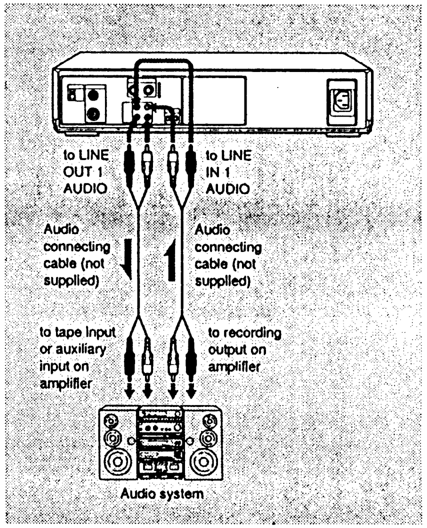
To record a TV program, follow the procedure below:

1 Press INPUT SELECT to light the LINE 1 or 2 indicator (whichever you have used for the connection) in the display window.

2 Press TAPE SPEED on the Remote Commander to select the tape speed (SP or EP).
The SP or EP indicator lights up in the display window.
To get better recording quality, select the SP mode, even though the EP mode allows you to record three times as long as the SP mode does.

3 Press ● REC on the VCR or the two ● REC buttons on the Remote Commander to start recording.

Connecting the VCR to an Audio System


to LINE OUT 1 AUDIO
to LINE IN 1 AUDIO
Audio connecting cable (not supplied)
Audio connecting cable (not supplied)
to tape input or auxiliary input on amplifier
to recording output on amplifier
Audio system

Notes
- If the VCR is installed near a tuner or a radio, noise may be heard during AM reception. In this case, move the VCR away from the tuner or the radio, adjust the AM antenna for minimum noise, or connect an external AM antenna to the tuner.
- Since a hi-fi recorded tape has a wide dynamic range, turn down the volume on the amplifier before playing back the tape to avoid damaging the speakers.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn off the connected amplifier.

SVO-1500/1500P

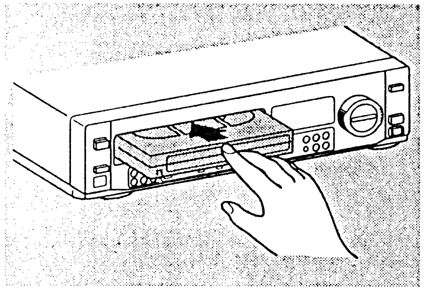
This section is extracted from SVO-1500 instruction manual.

Handling Video Cassettes

Handle your video cassettes carefully.

Inserting a Video Cassette

Insert a cassette by gently pressing the center of the back of the cassette.
When the cassette has been loaded, the ▭ indicator lights up in the display window and the VCR turns on automatically.

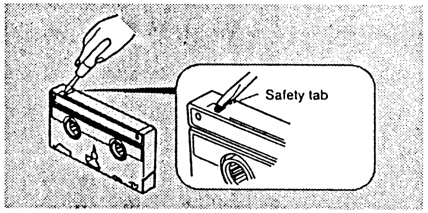


Ejecting a Video Cassette

Press ⏏ EJECT.
You can eject the cassette even when the power is off.
When you press ⏏ EJECT, the VCR turns on automatically, ejects the cassette, and then turns off again.

Protecting your cassette from being erased

The cassette is provided with a safety tab. To avoid accidental erasure, remove the safety tab using a screwdriver or a similar tool as shown.



If you want to record again on a cassette without its safety tab, simply cover the safety tab hole with a piece of adhesive tape.

Auto head cleaner

The VCR incorporates an auto head cleaner which cleans the video heads whenever a cassette is loaded or unloaded. When the auto head cleaner is not sufficient even after a cassette has been loaded/unloaded several times, use the Sony V-25CL video head cleaning cassette.

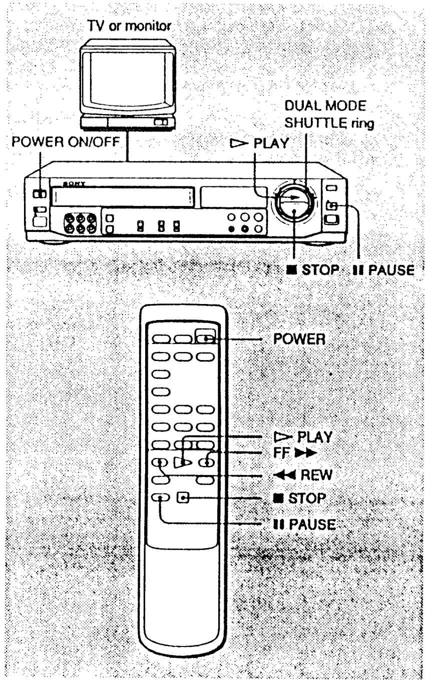
Playback

Continued ►

This section shows you how to play back a cassette.

Playing Back a Cassette

This VCR plays back tapes recorded in either SP, LP or EP mode.
Before playing back a cassette, be sure that all the connections are made correctly.



1 Turn on the TV.
If you have made the connection using the audio/video jacks, select the input for this VCR on the TV.

2 Insert a cassette.
The VCR turns on automatically.

3 Then press ▷ PLAY to start playback.
The ▷ indicator lights up in the display window.

To stop playback
Press ■ STOP.

To stop playback for a moment
Press II PAUSE.
Press II PAUSE again or ▷ PLAY to resume playback.

To fast-forward the tape
Press ■ STOP, then turn the DUAL MODE SHUTTLE ring on the VCR clockwise (▶▶) or press FF ▶▶ on the Remote Commander.

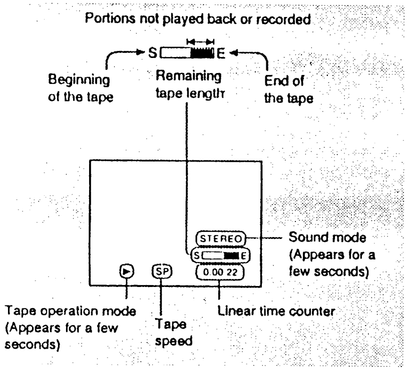
To rewind the tape
Press ■ STOP, then turn the DUAL MODE SHUTTLE ring on the VCR counterclockwise (◀◀) or press ◀◀ REW on the Remote Commander.

To rewind the tape to its beginning and to playback automatically (auto playback function)
Press ▷ PLAY after fully turning the DUAL MODE SHUTTLE ring on the VCR counterclockwise (◀◀). You cannot use the Remote Commander for the auto playback function.

When the tape reaches the end in playback mode
The tape automatically rewinds to the beginning (auto rewind), and the power remains on.

On-Screen Display

The following information appears on the TV screen.


Portions not played back or recorded
Beginning of the tape
Remaining tape length
End of the tape
STEREO
0 00 22
Sound mode (Appears for a few seconds)
Tape operation mode (Appears for a few seconds)
Tape speed
Linear time counter

To delete or call up VCR information on the TV screen

Press DISPLAY on the Remote Commander.

Notes on the on-screen display

- The remaining tape length indicator only shows the approximate amount of tape left.
- The remaining tape length indicator may not operate properly when a cassette with a short tape length such as T-20 or T-30, or non-standard tape is loaded.
- The on-screen display does not appear during still mode or slow motion playback, or high speed playback.

Indexing tape contents

The linear time counter on the TV screen indicates the approximate running time of the tape. By noting the counter readings, you can find certain scenes later by referring to the counter.

When a cassette is inserted, the counter reading becomes zero (0:00:00). The VCR keeps counting the length of the tape being played back unless the tape is ejected.

To reset the counter to zero (0:00:00)

Press COUNTER RESET on the Remote Commander.

Note on the counter

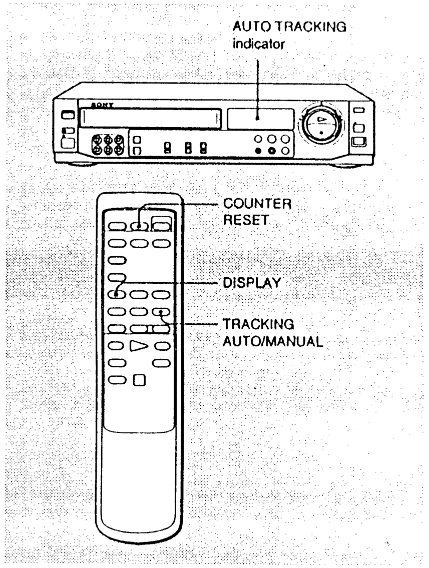
The linear time counter does not work properly on the portions on which no recording has been made.

Adjusting the Picture

The tracking condition is automatically adjusted on this VCR.

Adjusting the tracking automatically

The AUTO TRACKING indicator blinks in the display window while the VCR is searching for the best tracking condition, and lights when the optimum playback picture is obtained.

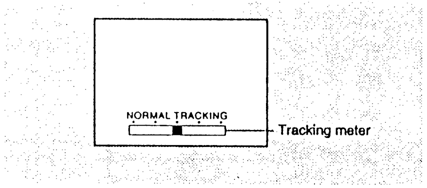

AUTO TRACKING indicator
COUNTER RESET
DISPLAY
TRACKING AUTO/MANUAL

The automatic tracking control is activated for about four seconds in the following cases:

- When you start playing back a tape after inserting it.
- When the picture is so distorted that the tracking condition needs to be readjusted even during playback.
- When you press TRACKING AUTO/MANUAL on the Remote Commander after the picture is adjusted manually.
- When the recording mode on the playback cassette is switched between SP, LP or EP and back again.

Adjusting the tracking manually

If streaks or distortion should appear in the picture even after auto tracking has been operated, press TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ on the Remote Commander to obtain the best possible picture.
The AUTO TRACKING indicator goes off in the display window, and if the on screen function is on, you can see the tracking meter on the TV screen.


NORMAL TRACKING
Tracking meter

To reactivate the auto tracking

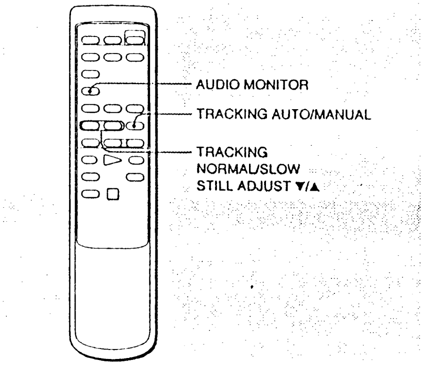
Press TRACKING AUTO/MANUAL on the Remote Commander so that the AUTO TRACKING indicator lights up in the display window.

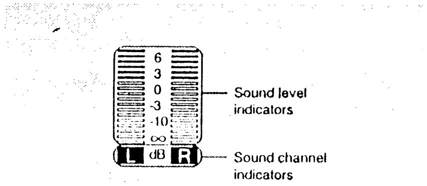
Notes on auto tracking

- Auto tracking adjustment does not work for tapes recorded in LP mode.
- During auto tracking adjustment, streaks or distortion may appear.

Listening to Stereo or Bilingual Tapes

This VCR allows you to listen to a stereo or bilingual program recorded on the tape.


AUDIO MONITOR
TRACKING AUTO/MANUAL
TRACKING NORMAL/SLOW STILL ADJUST ▼/▲


6
3
0
-3
-10
∞
dB
L
R
Sound level indicators
Sound channel indicators

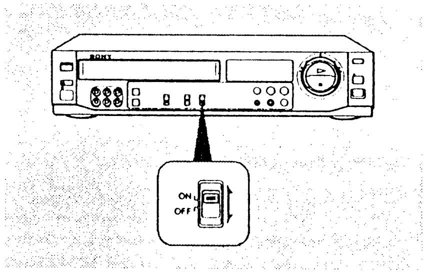
Press AUDIO MONITOR on the Remote Commander to select the kind of sound to hear.
Each time you press the button, stereo (left and right channel sound), left-channel sound, right-channel sound or the sound on the normal audio track is selected cyclically. The selected sound is shown in the display window.

Indicators		Sound to hear	
in the display window	on the screen	Stereo tape	Bilingual tape
L R	STEREO	Stereo	Left and right channels
L	LCH	Left channel	Left channel
R	RCH	Right channel	Right channel
None	None	Monaural on the normal audio track	Sound on the normal audio track

Note

The AUDIO MONITOR button has no effect if used with a monaural tape.

Listening to the Sounds on the Hi-Fi Track and Normal Track Mixed



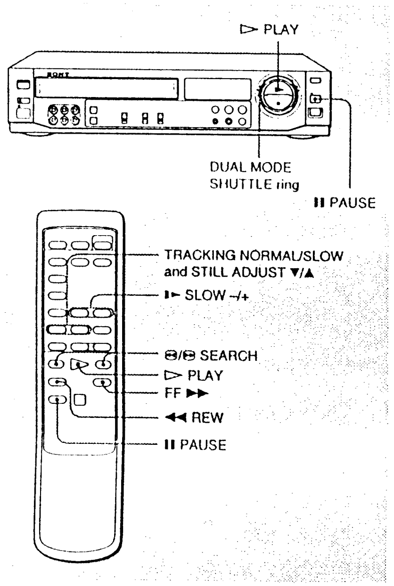
Set AUDIO MIX on the VCR to ON.

Note

When you set AUDIO MIX to ON, the playback sound may become muffled and the AUDIO MONITOR button does not function.
Reset to OFF after listening to the sound in AUDIO MIX mode.

Variable Speed Playback

You can play back the picture at various speeds: as a still; in slow motion; at high speed (picture search); in forward direction and in reverse direction.
Most of the variable speed playback modes are operated by using the buttons on the Remote Commander, but you can play a tape at a variety of forward and reverse speeds also by using the DUAL MODE SHUTTLE ring on the VCR.
No sound can be heard during variable speed playback.



Still Mode (Pause Mode)

During playback, press ▮▮ PAUSE.
To resume normal playback, press ▮▮ PAUSE again or press ▷ PLAY. When the still mode lasts for approximately 5 minutes, the VCR automatically resumes normal playback.

Slow Motion Playback

During playback or playback pause mode, press ▮► SLOW + or – on the Remote Commander. You can also change the slow motion speed with ▮► SLOW + or –.
Press ▮► SLOW + to increase the speed, or ▮► SLOW – to decrease the playback speed.
If you leave your VCR in slow motion playback for more than 5 minutes, normal playback resumes.

Picture Search

During playback or playback pause mode, fast-forward or rewinding, turn the DUAL MODE SHUTTLE ring clockwise to ►► (forward direction) or turn it counterclockwise to ◄◄ (reverse direction). A high-speed picture without sound appears on the screen until you release the ring.
To resume the previous mode, release the ring at the desired scene.

When using the Remote Commander
Press and hold FF ►► or ◄◄ REW instead of turning the DUAL MODE SHUTTLE ring on the VCR.
To resume the previous mode, release the button at the desired scene.

Locked Picture Search

During playback or playback pause mode, press ⏩ SEARCH (forward direction) or ⏪ SEARCH (reverse direction) on the Remote Commander. A high-speed picture appears on the screen. You do not have to hold the button down.
To resume normal playback, press ▷ PLAY.

Notes on variable speed playback
- Streaks or distortion cannot be completely eliminated.
- Some snow or distortion are unavoidable when playing back a cassette in reverse or reverse slow motion playback.
- When the tape transporting direction is changed during variable speed playback, the playback picture and sound is distorted for a moment.

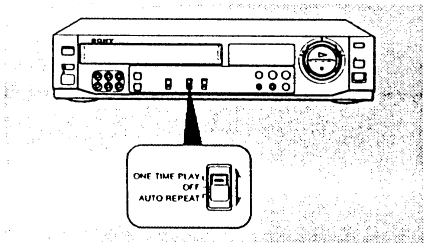
Picture Adjustment During Variable Speed Playback

- If a picture played back in slow motion has streaks or distortion, adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ on the Remote Commander. You can adjust the picture more easily by changing the speed closer to normal playback by pressing ▮► SLOW +.
- If the picture appears to shake in still mode, adjust it with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ on the Remote Commander until the picture stabilizes.
  While pausing a tape, you may notice a band at the top or bottom of the screen. If this happens, adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▼/▲ on the Remote Commander while playing back the tape in slow motion.

Repeat Playback and One Time Playback

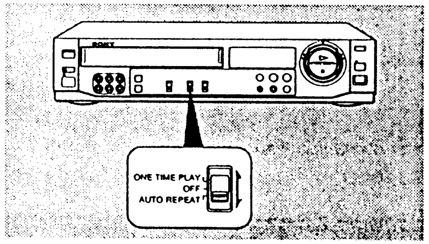
You have the following two ways of playing a tape other than normal playback:
- *Playing back once from the beginning of the tape until the end of the recorded portion, and*
- *Playing back repeatedly between the beginning of the tape and the end of the recorded portion.*

One Time Playback



1. Set the ONE TIME PLAY/OFF/AUTO REPEAT switch to ONE TIME PLAY.
2. Insert a rewound tape.
3. Press ▷ PLAY.
   After playing only the recorded portion, the VCR rewinds the tape and stops.

Repeat Playback



1. Set the ONE TIME PLAY/OFF/AUTO REPEAT switch to AUTO REPEAT.
2. Insert a rewound tape.
3. Press ▷ PLAY.
   After playing only the recorded portion, the VCR rewinds the tape to the beginning of the tape and plays the same recorded portion repeatedly.

To stop playback

Press ■ STOP.

Conditions of the tape for one time playback and repeat playback

You must use a tape which fills the following conditions to use these functions:
- The blank portion of the beginning of a tape must be less than 25 seconds.
- There must be a blank for more than 10 seconds just after the end of the recorded portion. If there is not, the VCR might continue to play the next recorded portion or play back until the end of a tape.

To make a blank portion on a recorded tape

1 Press INPUT SELECT to display "LINE" in the display window.
2 Record the tape with no incoming signals from LINE IN.

To cancel one time playback and repeat playback

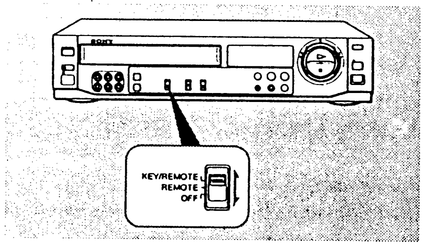
Set the ONE TIME PLAY/OFF/AUTO REPEAT switch to OFF.

Note
A tape that contains only sound and no pictures will not be played if this switch is not set to OFF.

Locking Buttons on the VCR and Remote Commander

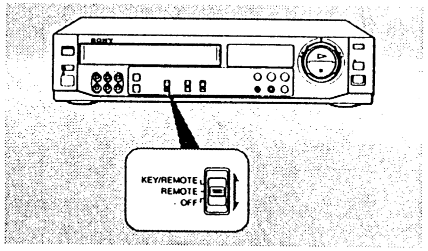
You can lock the buttons on the VCR and/or Remote Commander. This is convenient for preventing accidental operations when you control this VCR with a wired control unit (not supplied). It is also convenient when you use this VCR in a public place; this protects the VCR from mishaps caused by other people touching it.

Locking the Buttons on Both the VCR and Remote Commander



Set the INHIBIT switch to KEY/REMOTE.

Locking the Buttons Only on the Remote Commander



Set the INHIBIT switch to REMOTE.

To resume normal operation
Set the INHIBIT switch to OFF.

Index Function

You can easily search for a desired program on a tape by detecting index signals.

How Index Signals are Marked

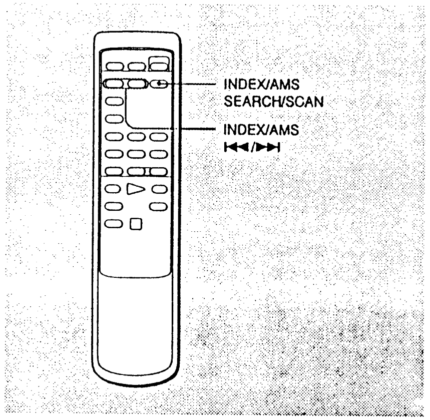
An index signal is automatically marked on the tape when a recording starts.

Notes

- The index signal is marked when you start recording from stop mode. If the VCR is in recording pause mode and then recording is resumed, no index signal will be marked.
- Index signals cannot be marked on a tape whose safety tab is removed.

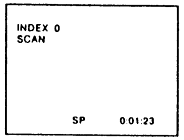
Watching the Beginning of Each Recording Consecutively — Index Scan

You can watch the beginning of each recording consecutively by detecting index signals one by one.



1 Insert a cassette with index signals marked on it.

2 Press INDEX/AMS SEARCH/SCAN until "INDEX 0" and "SCAN" appear in the display window and on the TV screen.



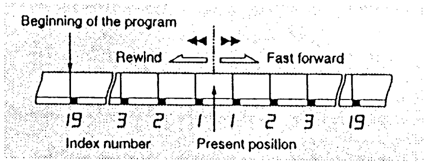
INDEX 0
SCAN
SP 0:01:23

3 Press INDEX/AMS ⏭ (or ⏮) once.
The VCR advances to the next (or previous) index signal. Then the VCR plays back the tape for approximately 10 seconds and then moves to the next index signal in the selected direction.

4 Press ▷ PLAY when you locate the desired index signal.
Normal playback resumes.

Locating a Desired Program — Index Search

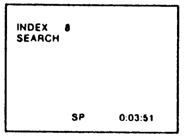
You can locate a desired program and play it back automatically by specifying its index position.
Up to the 99th index signal from the present position on the tape can be located.



1 Insert a cassette with index signals marked on it.

2 Press INDEX/AMS SEARCH/SCAN until "INDEX" and "SEARCH" appear on the TV screen. "INDEX" also appears in the display window.

3 Press INDEX/AMS ⏮ to locate a previous program or press INDEX/AMS ⏭ to locate a program ahead repeatedly until the number for the desired program appears after "INDEX" in the display window and on the TV screen.
The VCR starts searching when you press the button first and then each time you press the button, the number increases.



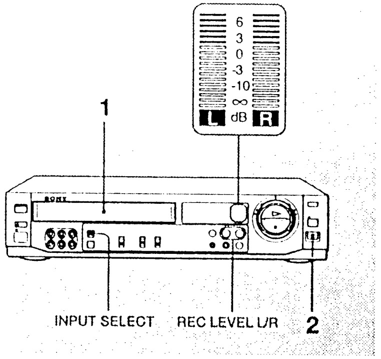
INDEX 8
SEARCH
SP 0:03:51

When the specified program is reached, playback starts.

Audio Recording

Hi-Fi Recording

In conventional recording, audio signals are recorded on the audio track and video signals on the video track.
In hi-fi recording, audio signals are recorded in the same manner as video signals, using two rotary hi-fi audio heads. Thus, high-quality sound recording is possible.


6
3
0
-3
-10
∞
L dB R
1
INPUT SELECT
REC LEVEL L/R
2

Before you begin

- Your audio system must be correctly connected to the VCR. (See "Connections" on page 5.)
- Set INPUT SELECT to LINE 1 or LINE 2 according to which your audio system is connected.
- Set the tape speed to SP or EP.
- Adjust the recording level with the REC LEVEL L/R controls.
  Play a recording source and manually adjust the recording level while observing the sound level indicators.
  When recording from a cassette deck:
  Adjust so that the **L** and **R** sound level indicators sometimes reach their peaks.
  When recording from a CD player or PCM digital audio processor:
  Adjust so that the **L** and **R** sound level indicators reach their peaks only at the highest signal level.

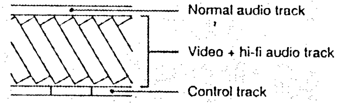
Note
The elements which light up may differ slightly between the **L** and **R** sound level indicators.

1 Insert a cassette.

2 Press ● REC on the VCR or the two ● REC buttons on the Remote Commander simultaneously.
Audio recording starts.

Hi-fi recording pattern on tape

The VCR automatically performs hi-fi recording and normal audio recording at the same time, so that these tapes also can be played back on a VCR without a hi-fi system.

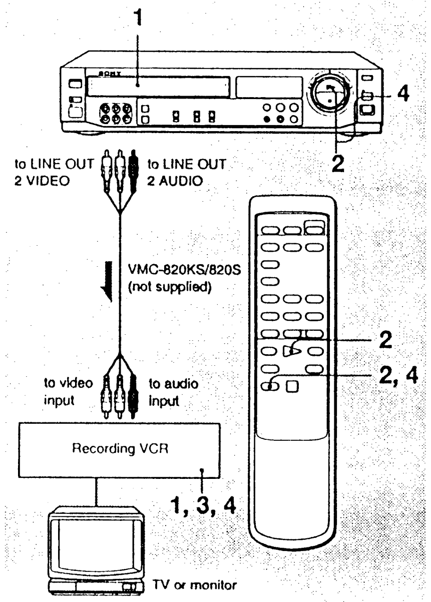

Normal audio track
Video + hi-fi audio track
Control track

Dubbing with Another VCR

Continued ►

You can dub tapes by connecting this VCR to another VCR. Connect them using either the LINE IN/OUT 1 jacks on the rear panel or the LINE IN/OUT 2 jacks on the front panel of this VCR. (In the following connections, the LINE IN/OUT 2 jacks on the front panel are used.)
For hi-fi recording and playback, connect a hi-fi VCR and use hi-fi tapes.

Dubbing Tapes onto Another VCR


1
4
2
to LINE OUT 2 VIDEO
to LINE OUT 2 AUDIO
VMC-820KS/820S (not supplied)
2
2, 4
to video input
to audio input
Recording VCR
1, 3, 4
TV or monitor

- If the other VCR is a monaural type, use the VMC-910MS/920MS cable (not supplied).

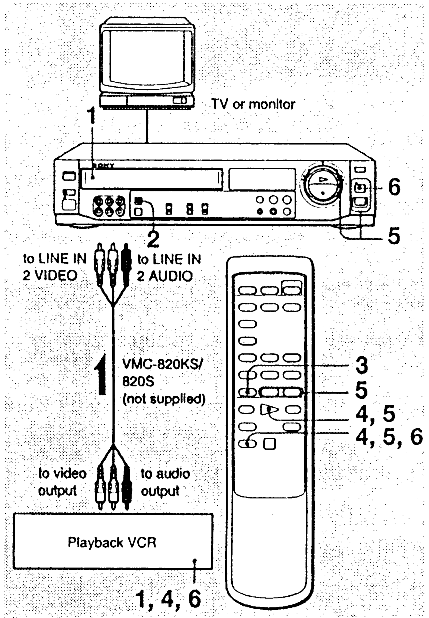
1 Insert a source tape into this VCR, and a blank or erasable tape with a safety tab into the recording VCR.

2 Search for the playback start point on this VCR and put this VCR into playback pause mode.

3 Search for the recording start point on the recording VCR and put the recording VCR into recording pause mode.

4 Press ❚❚ PAUSE on both VCRs.
Dubbing starts.

Dubbing Tapes from Another VCR


TV or monitor
1
6
5
2
to LINE IN 2 VIDEO
to LINE IN 2 AUDIO
1
VMC-820KS/820S (not supplied)
3
5
4, 5
4, 5, 6
to video output
to audio output
Playback VCR
1, 4, 6

- If the other VCR is a monaural type, use the VMC-910MS/920MS cable (not supplied).

1 Insert a source tape into the playback VCR, and a blank or erasable tape with a safety tab into this VCR.

2 Press INPUT SELECT to light the LINE 2 indicator in the display window of this VCR. (If you use the LINE IN/OUT 1 jacks on the rear panel, light the LINE 1 indicator in the display window.)

3 Press TAPE SPEED on the Remote Commander to select the tape speed (SP or EP).
The SP or EP indicator (whichever you have selected) lights up in the display window.

4 Search for the playback start point on the playback VCR and put the playback VCR into playback pause mode.

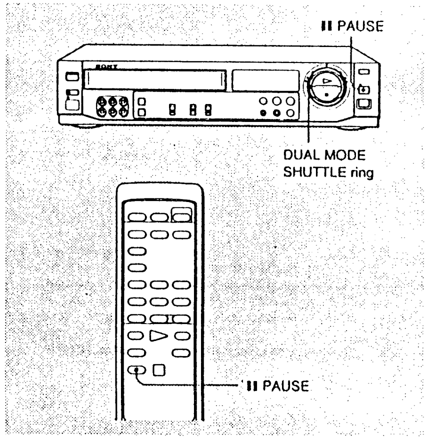
5 Search for the recording start point on this VCR and put this VCR into recording pause mode by pressing **II** PAUSE just after pressing ● REC on this VCR or the two ● REC buttons on the Remote Commander simultaneously.

6 Press **II** PAUSE on both VCRs.
Dubbing starts.

To watch a TV program while dubbing a tape
Just select the desired channel on the TV.

Pausing Techniques

You can skip an unwanted scene and resume recording smoothly while dubbing a tape on this VCR by using the pause function.


II PAUSE
DUAL MODE SHUTTLE ring
II PAUSE

Technique 1

To skip an unwanted scene and resume recording smoothly:

1 Press **II** PAUSE just when an unwanted scene begins.
Recording stops and the VCR enters recording pause mode.

2 Press **II** PAUSE at the point you want to start recording again to release the pause.
Recording resumes from the point set in step 1.

Technique 2

When an unwanted scene has already started recording, you can rewind the tape to the desired cutout point, have the VCR standby in recording pause mode, and resume recording at the desired scene in the source program.

1 Press **II** PAUSE to put the VCR into recording pause mode.

2 Turn the DUAL MODE SHUTTLE ring counterclockwise to search for the point from which you want to continue recording.

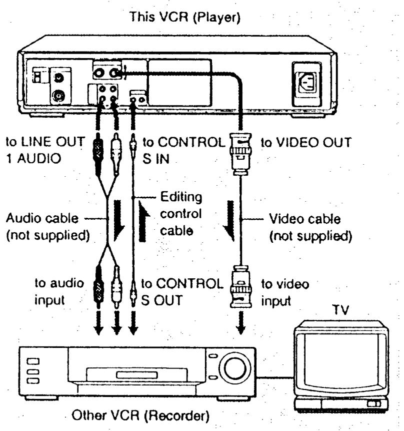
3 Release the DUAL MODE SHUTTLE ring at the desired point.
After an instant in still mode, the VCR automatically enters recording pause mode.

4 Press **II** PAUSE again.
Recording resumes.

Synchronized Editing

Using the CONTROL S IN Jack

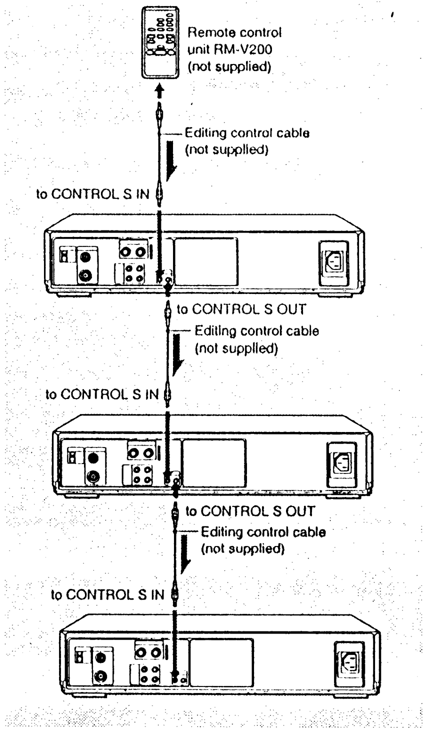
If your other VCR has a CONTROL S jack, connect the VCRs via the CONTROL S jacks. This additional connection enables you to pause and resume playback or recording on both VCRs from one VCR.


This VCR (Player)
to LINE OUT 1 AUDIO
to CONTROL S IN
to VIDEO OUT
Audio cable (not supplied)
Editing control cable
Video cable (not supplied)
to audio input
to CONTROL S OUT
to video input
TV
Other VCR (Recorder)

Note
You must use other VCRs that are equipped with a SYNCHRO EDIT button, or synchronized editing cannot be performed. For details, see the Operating Instructions of the other VCRs.

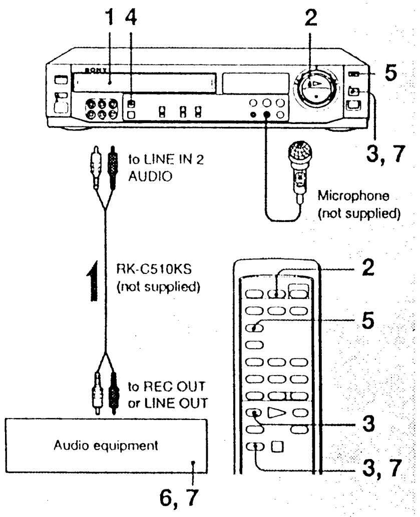
Using the CONTROL S IN and OUT Jacks

When using a remote control unit, you can remotely control two or more VCRs by connecting via the CONTROL S IN and OUT jacks. For details, see the Operating Instructions of the remote control unit.


Remote control unit RM-V200 (not supplied)
Editing control cable (not supplied)
to CONTROL S IN
to CONTROL S OUT
Editing control cable (not supplied)
to CONTROL S IN
to CONTROL S OUT
Editing control cable (not supplied)
to CONTROL S IN

Audio Dubbing

You can record additional music or narration on a recorded tape while watching the playback picture. During audio dubbing, the sound will be recorded on the normal audio track.
Connect audio source equipment such as a tape deck, audio system, etc. to the LINE IN 1 or 2 AUDIO jacks.



1 Insert a tape on which you want to do audio dubbing.

2 Advance the tape and locate the position on the tape where you want to end audio dubbing, and press COUNTER RESET to reset the counter to zero.

3 Rewind the tape and locate the position on the tape where you want to start audio dubbing. Press ❚❚ PAUSE at the desired point.

4 Press INPUT SELECT to light the LINE 1 or 2 indicator (whichever you have used for connection) in the display window.

5 Press AUDIO DUB.
The AUDIO DUB indicator lights up.

6 Prepare the audio source equipment for playback.

7 Press ❚❚ PAUSE and start playing the audio source at the same time.
Audio dubbing starts.
When the counter reaches zero, the VCR automatically stops.

Note
When you do the audio dubbing on tapes recorded in NTSC EP mode, the original sound is completely erased.

To stop during audio dubbing
Press ■ STOP.

To stop audio dubbing momentarily
Press ❚❚ PAUSE. To restart, press ❚❚ PAUSE again.

To do audio dubbing from a microphone
1 Insert a tape on which you want to do audio dubbing.
2 Connect a microphone to the MIC jack.

Notes
- The dubbed sound will be a mixture of the hi-fi sound on the tape and the sound from the microphone.
- While the unit is in pause mode, you can only hear the sound from the microphone.

3 Adjust the volume of the microphone with the MIC LEVEL control.
4 Follow steps 2 to 5 above.
5 Press ❚❚ PAUSE and start audio dubbing by speaking into the microphone.

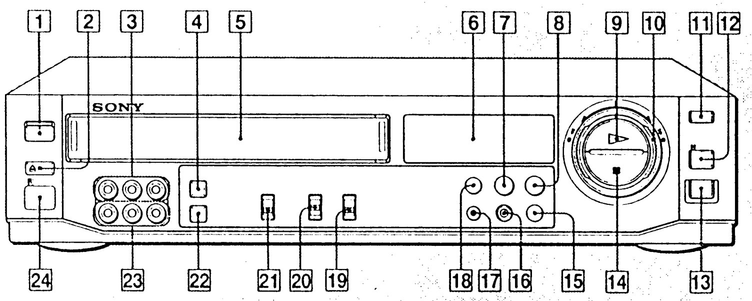
Notes
- Audio dubbing is not possible on a tape recorded in NTSC LP mode.
- When you perform audio dubbing on tapes recorded in NTSC EP mode, you can only record the sound from the microphone.
- Place the audio dubbing end point where pictures are recorded on the tape. If you do audio dubbing where no pictures are recorded, audio noise may occur.

Labeling Parts and Controls

Continued ►

Refer to pages in circles for details.

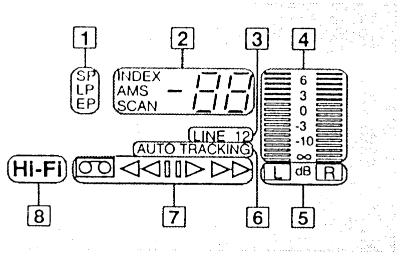
Front Panel



1 POWER ON/OFF switch and indicator ❼
2 ≙ EJECT button ❻
3 LINE IN 2 VIDEO/L-AUDIO-R jacks ⓯, ⓲
4 INPUT SELECT button ❺, ⓫, ⓮, ⓯, ⓲
5 Cassette compartment ❻
6 Display window ⓴
7 L REC LEVEL control ⓮
8 R REC LEVEL control ⓮
9 ▷ PLAY button ❼, ❿, ⓫, ⓭, ⓮, ⓯, ⓲
10 DUAL MODE SHUTTLE ring ❸, ❼, ❿, ⓰, ⓲
11 AUDIO DUB button and indicator ⓲
12 ❚❚ PAUSE button ❼, ❿, ⓯, ⓰, ⓲
13 ● REC button and indicator ❺, ⓮, ⓰
14 ■ STOP button ❼, ⓫, ⓲
15 MIC LEVEL control ⓲
16 MIC jack ⓲
17 HEADPHONES jack
Connect headphones to the VCR via this jack.
18 Headphone LEVEL control
Use this control to adjust the headphone volume.
19 AUDIO MIX switch ❾
ON/OFF
20 ONE TIME PLAY/OFF/AUTO REPEAT switch ⓫
21 INHIBIT switch ⓬
KEY/REMOTE/REMOTE/OFF
22 TV/VTR button
23 LINE OUT 2 VIDEO/L-AUDIO-R jacks ⓯
24 Remote sensor ❸

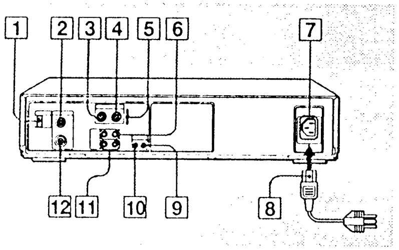
Labeling Parts and Controls

Display Window



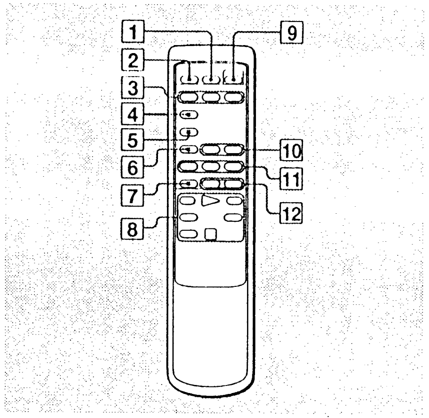
[1] Tape speed indicator ❺, ⓮, ⓯
[2] INDEX/AMS indicator ⓭
[3] LINE 1/2 indicators ❺, ⓫, ⓮, ⓯, ⓲
[4] Sound level indicators ❾, ⓮
[5] Sound channel indicators ❾, ⓮
[6] AUTO TRACKING indicator ❽, ❾
[7] Tape operation indicators ❻, ❼, ⓮
[8] Hi-Fi indicator

Rear Panel



[1] RF UNIT CH3/CH4 switch ❹
[2] VHF/UHF IN jack ❹
[3] VIDEO IN jack ❺
[4] VIDEO OUT jack ❹, ⓱
[5] Hook hole (for chain)
Use a chain (not supplied) to make sure that this VCR is not moved from its place.
[6] LINE IN 1 (R-AUDIO-L) jacks ❺
[7] AC IN (inlet) connector ❹
[8] Power cord ❹
[9] CONTROL S OUT jack ⓱
[10] CONTROL S IN jack ⓱
[11] LINE OUT 1 (R-AUDIO-L) jacks ❹, ⓱
[12] VHF/UHF OUT jack ❹

Remote Commander

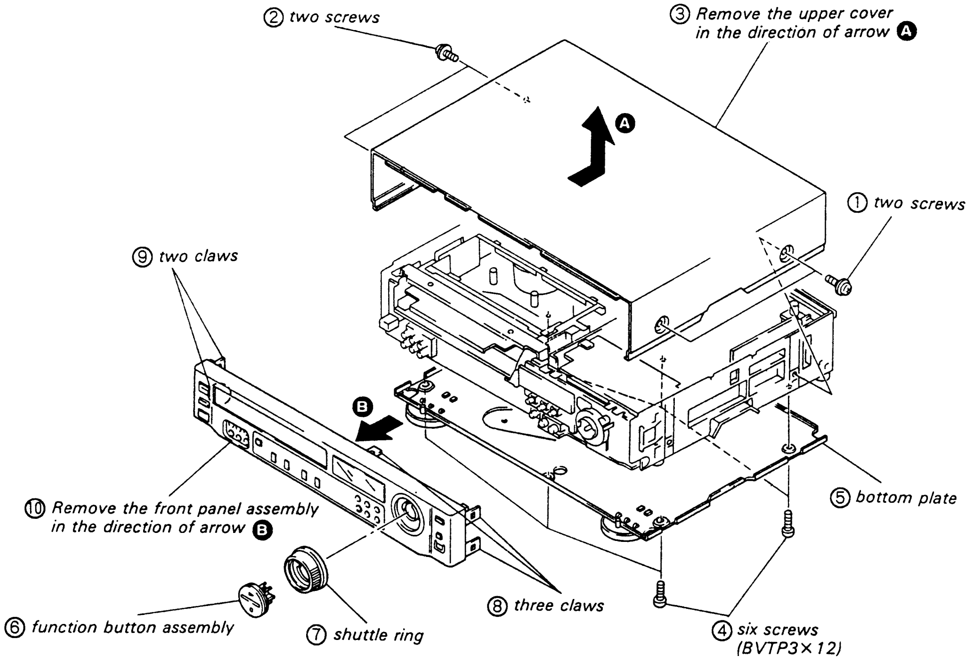


[1] **COUNTER RESET button ❽, ⓲**
[2] **TV/VTR button**
[3] **INDEX/AMS buttons**
⏮/⏭ buttons ⓭
SEARCH/SCAN button ⓭
[4] **AUDIO DUB button ⓲**
[5] **AUDIO MONITOR button ❾**
[6] **DISPLAY button ❽**
[7] **TAPE SPEED button ❺, ⓮, ⓯**
[8] **Tape transport buttons**
⊖/⊕ SEARCH buttons ❿, ⓲
◀◀ REW button ❼, ❿
▷ PLAY button ❼, ❿, ⓫, ⓭, ⓮, ⓯, ⓲
■ STOP button ❼, ⓫, ⓲
FF ▶▶ button ❼, ❿
❚❚ PAUSE button ❼, ❿, ⓯, ⓰, ⓲
[9] **POWER switch ❼**
[10] **❚▶ SLOW –/+ buttons ❿**
[11] **TRACKING buttons**
AUTO/MANUAL button ❽, ❾
NORMAL/SLOW STILL ADJUST ▼/▲ buttons ❾, ❿
[12] **● REC buttons ❺, ⓮, ⓰**

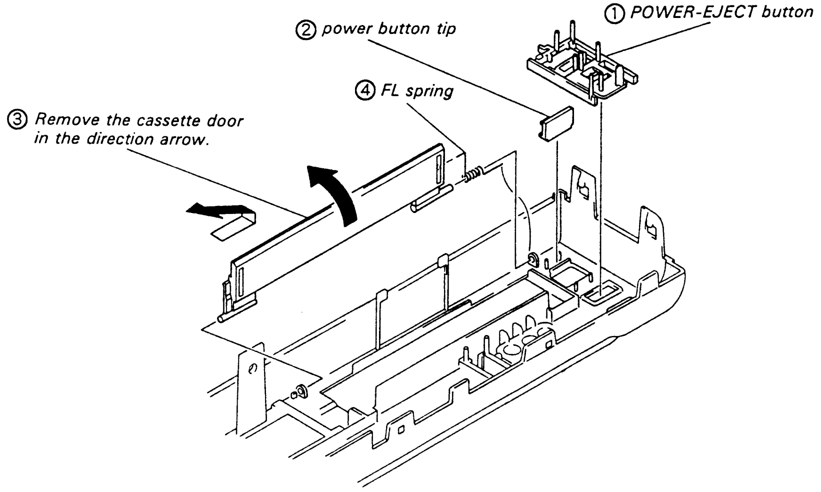
SECTION 2
DISASSEMBLY

NOTE: Follow the disassembly procedure in the numerical order given.

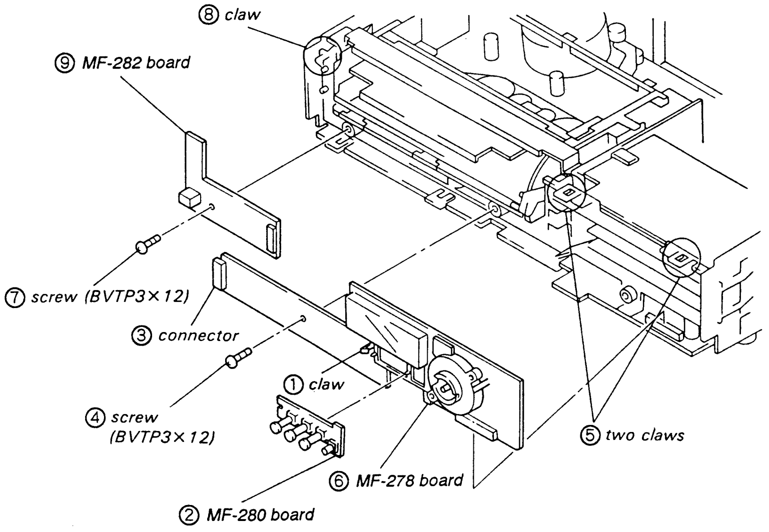
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


② two screws
③ Remove the upper cover in the direction of arrow Ⓐ
Ⓐ
① two screws
⑨ two claws
Ⓑ
⑤ bottom plate
⑩ Remove the front panel assembly in the direction of arrow Ⓑ
⑧ three claws
⑥ function button assembly
⑦ shuttle ring
④ six screws (BVTP3×12)

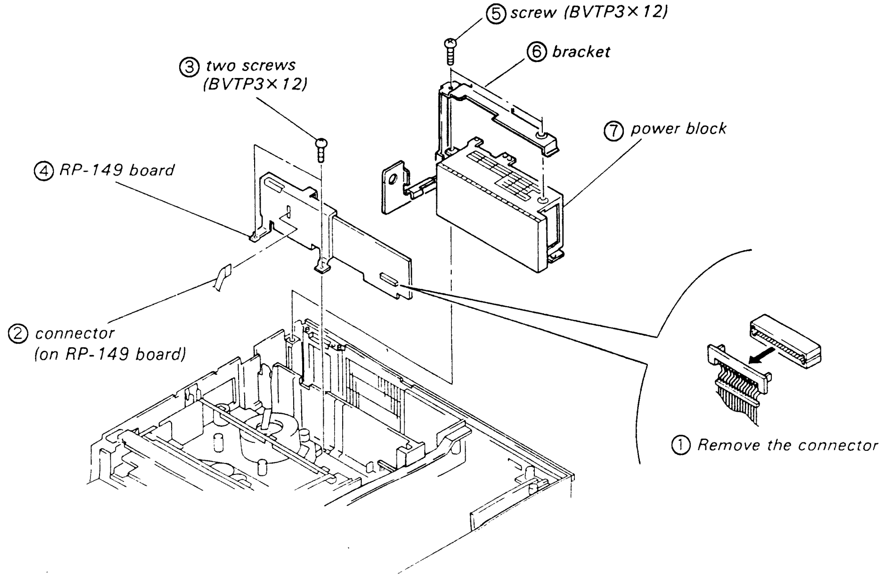
2-2. REMOVAL OF CASSETTE DOOR


① POWER-EJECT button
② power button tip
④ FL spring
③ Remove the cassette door in the direction arrow.

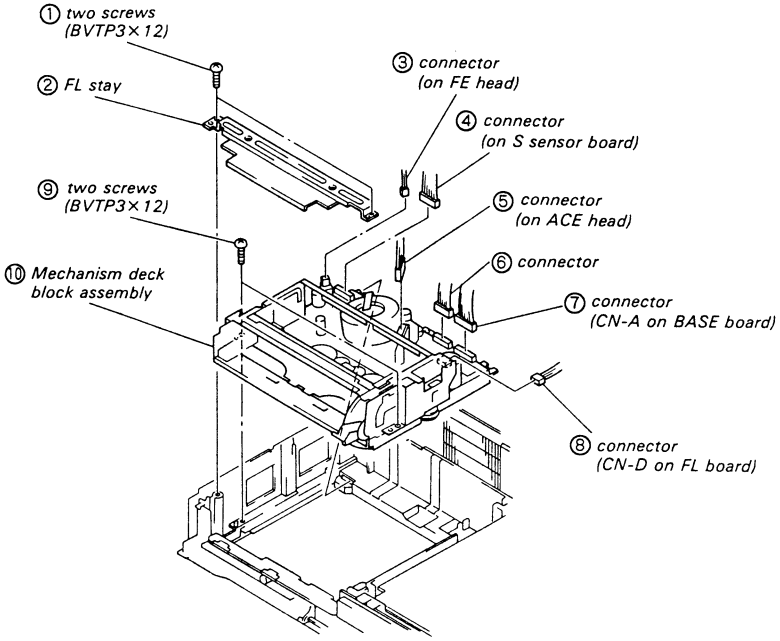
2-3. REMOVAL OF MF-278 AND MF-282 BOARDS (including MF-280)


⑧ claw
⑨ MF-282 board
⑦ screw (BVTP3×12)
③ connector
④ screw (BVTP3×12)
① claw
⑥ MF-278 board
② MF-280 board
⑤ two claws

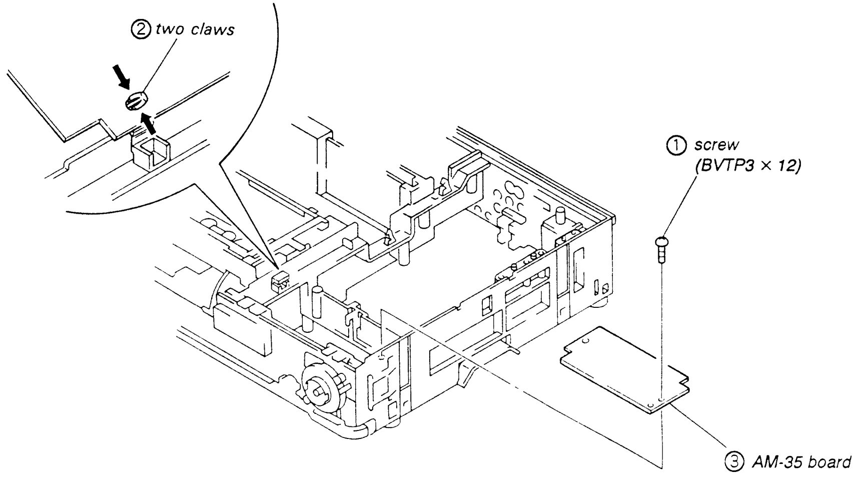
2-4. REMOVAL OF RP-149 BOARD AND POWER BLOCK


⑤ screw (BVTP3×12)
⑥ bracket
③ two screws (BVTP3×12)
⑦ power block
④ RP-149 board
② connector (on RP-149 board)
① Remove the connector

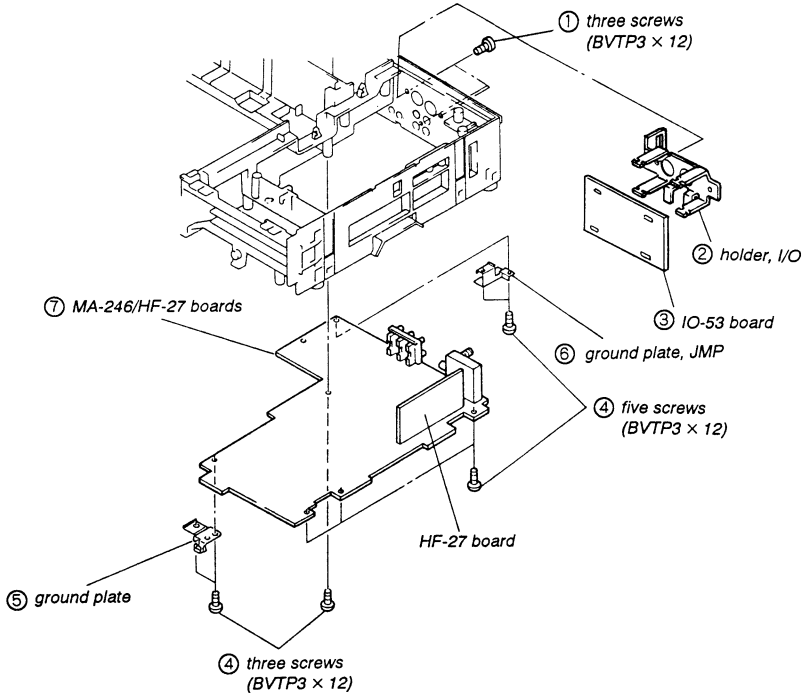
2-5. REMOVAL OF MECHANISM DECK BLOCK ASSEMBLY


① two screws (BVTP3×12)
② FL stay
③ connector (on FE head)
④ connector (on S sensor board)
⑨ two screws (BVTP3×12)
⑤ connector (on ACE head)
⑥ connector
⑩ Mechanism deck block assembly
⑦ connector (CN-A on BASE board)
⑧ connector (CN-D on FL board)

2-6. REMOVAL OF AM-35 BOARD

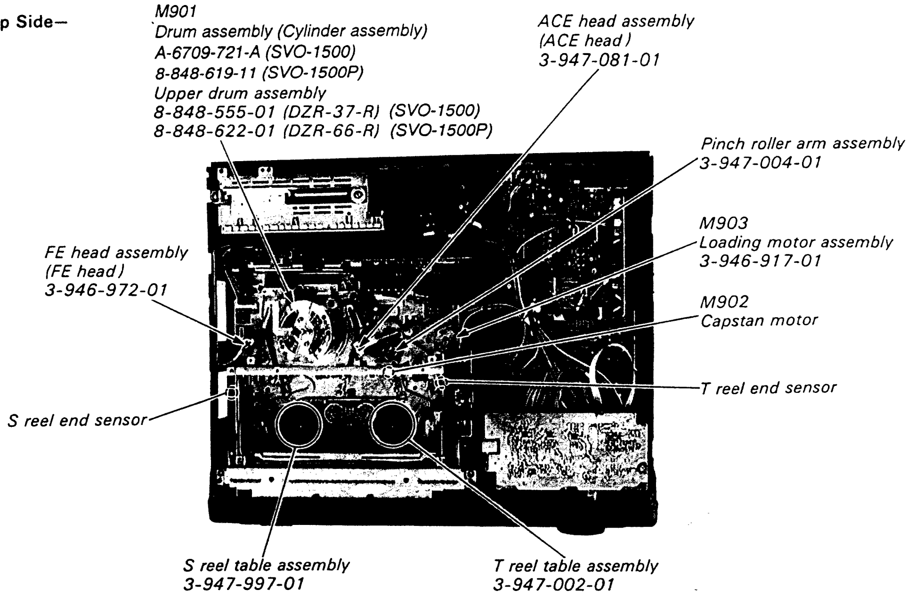

② two claws
① screw (BVTP3 × 12)
③ AM-35 board

2-7. REMOVAL OF MA-246, HF-27 AND IO-53 BOARDS

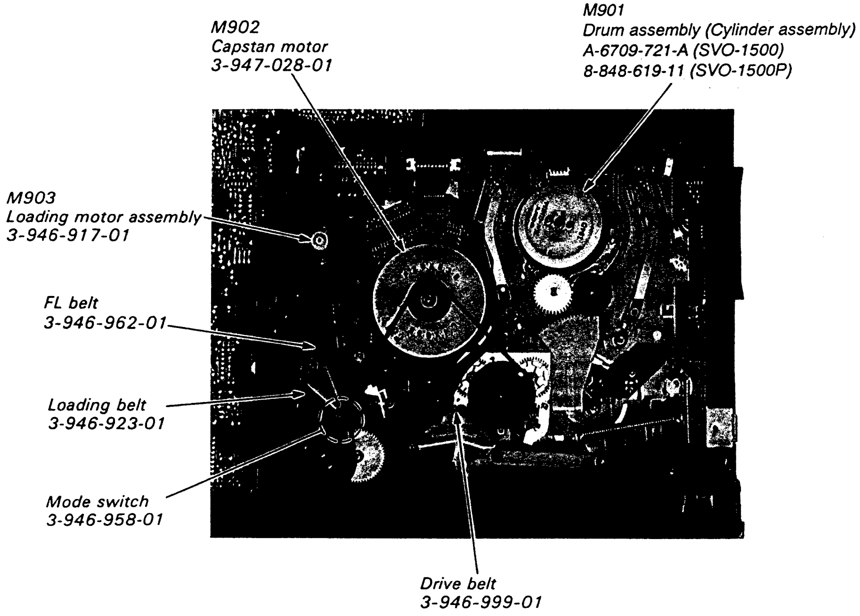

① three screws
(BVTP3 × 12)
② holder, I/O
③ IO-53 board
⑦ MA-246/HF-27 boards
⑥ ground plate, JMP
④ five screws
(BVTP3 × 12)
HF-27 board
⑤ ground plate
④ three screws
(BVTP3 × 12)

2-8. INTERNAL VIEWS

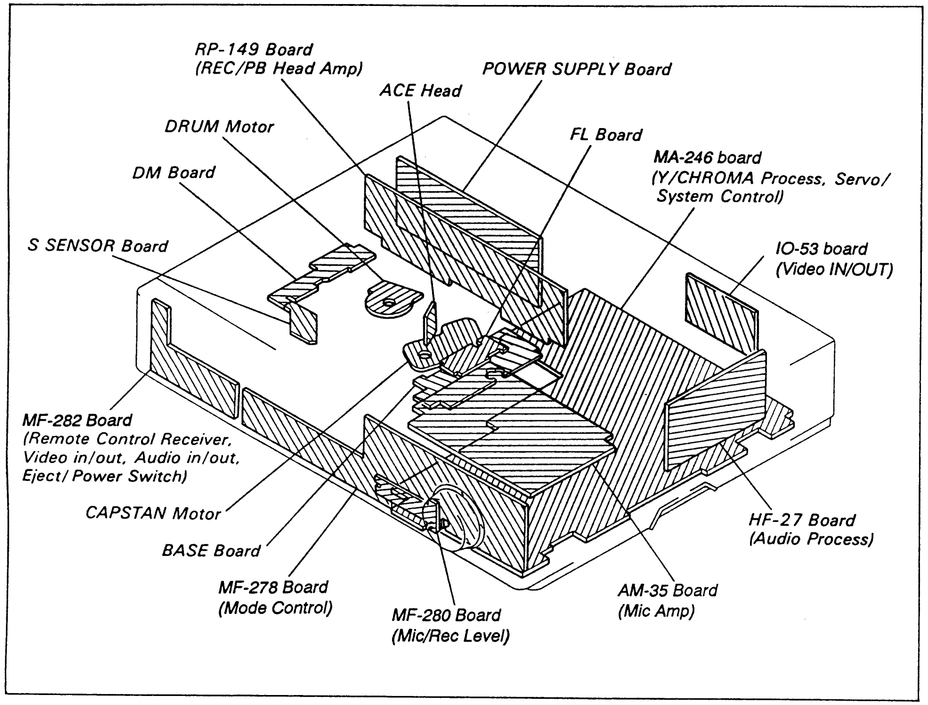
—Top Side—


M901
Drum assembly (Cylinder assembly)
A-6709-721-A (SVO-1500)
8-848-619-11 (SVO-1500P)
Upper drum assembly
8-848-555-01 (DZR-37-R) (SVO-1500)
8-848-622-01 (DZR-66-R) (SVO-1500P)
ACE head assembly
(ACE head)
3-947-081-01
Pinch roller arm assembly
3-947-004-01
M903
Loading motor assembly
3-946-917-01
M902
Capstan motor
T reel end sensor
FE head assembly
(FE head)
3-946-972-01
S reel end sensor
S reel table assembly
3-947-997-01
T reel table assembly
3-947-002-01

—Bottom Side—

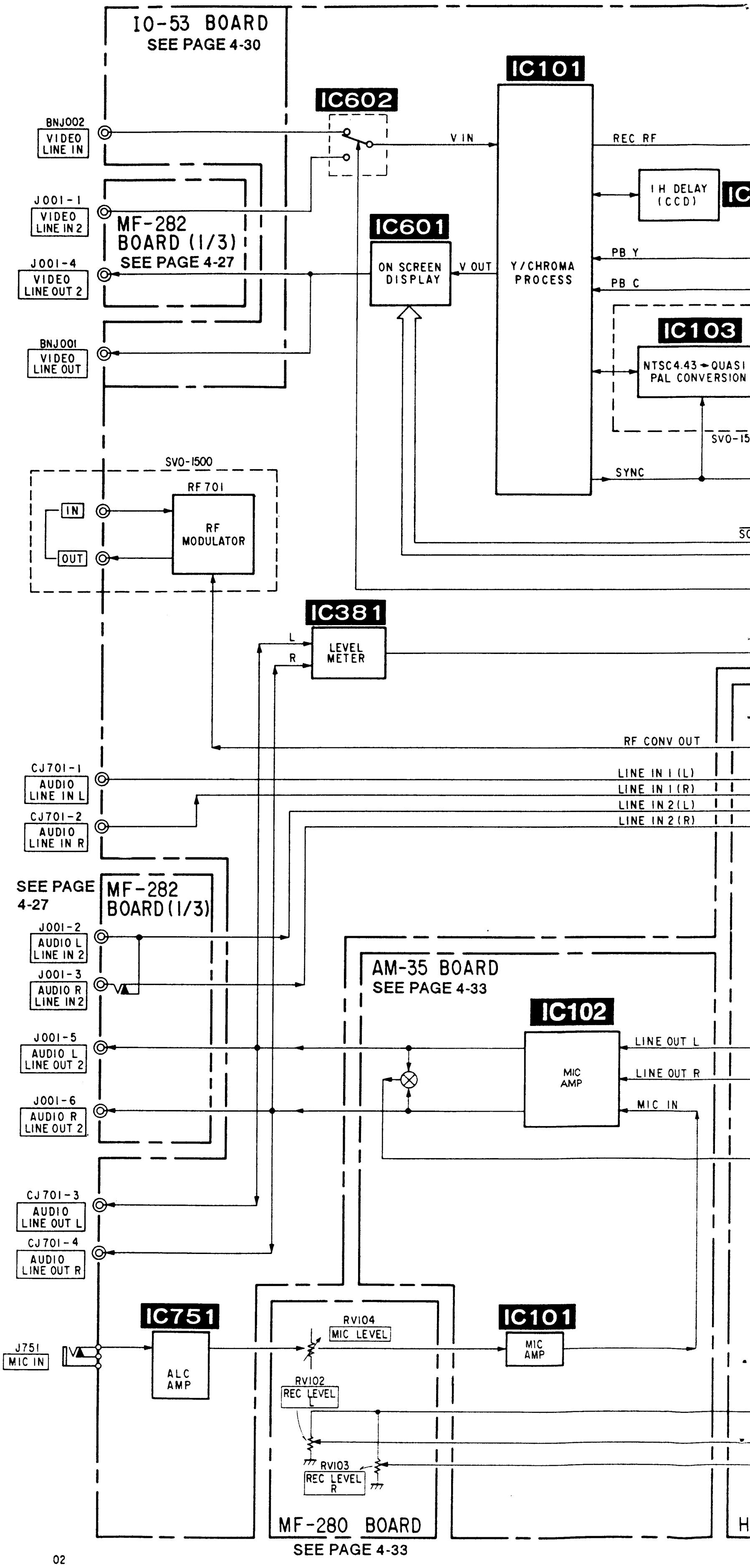

M902
Capstan motor
3-947-028-01
M901
Drum assembly (Cylinder assembly)
A-6709-721-A (SVO-1500)
8-848-619-11 (SVO-1500P)
M903
Loading motor assembly
3-946-917-01
FL belt
3-946-962-01
Loading belt
3-946-923-01
Mode switch
3-946-958-01
Drive belt
3-946-999-01

2-9. CIRCUIT BOARDS LOCATION


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/ Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

SECTION 3
DIAGRAMS

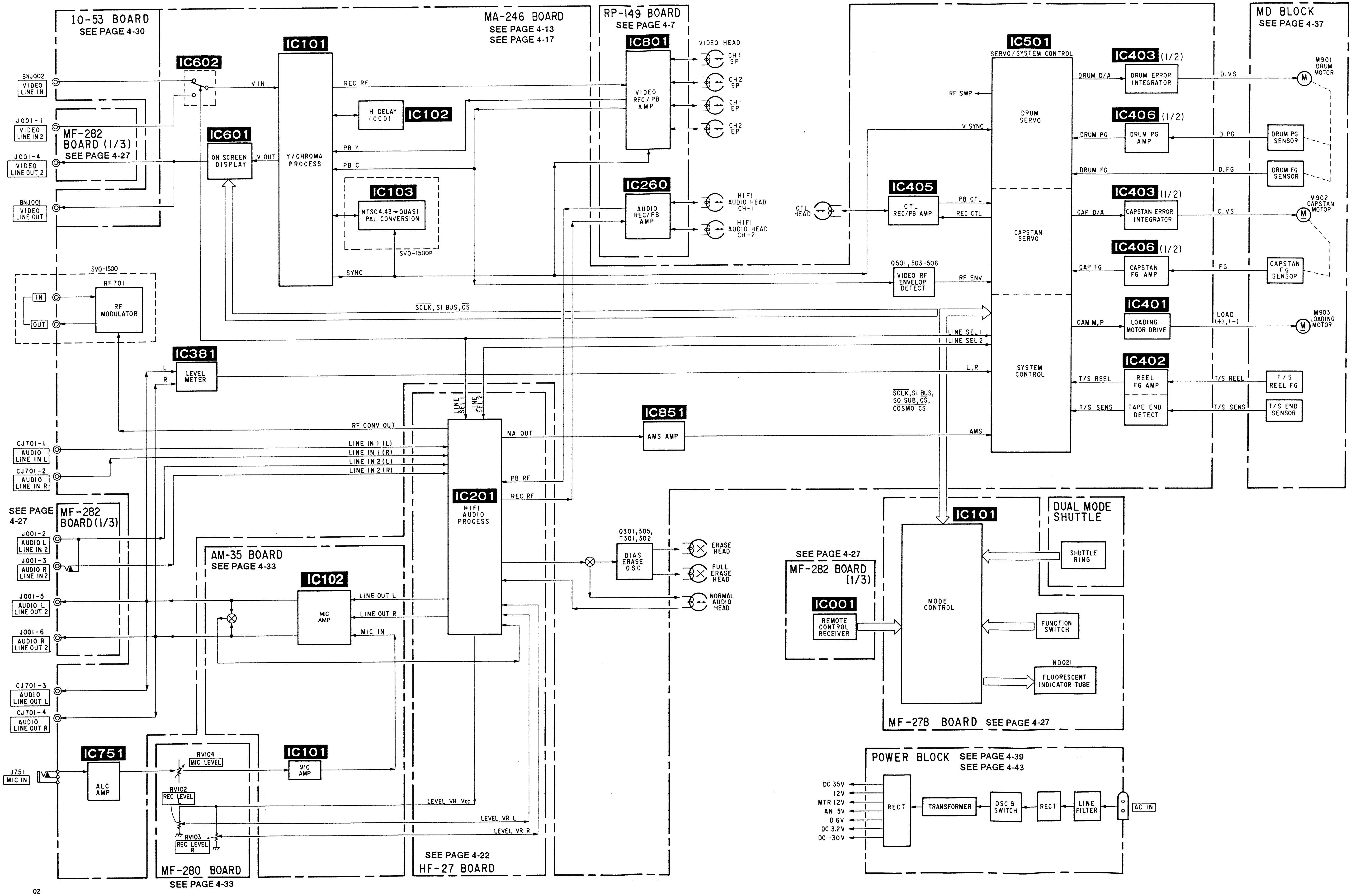
3-1. OVERALL BLOCK DIAGRAM



IO-53 BOARD
SEE PAGE 4-30
IC101
IC602
BNJ002
VIDEO LINE IN
V IN
REC RF
1 H DELAY (CCD)
J001-1
VIDEO LINE IN 2
MF-282 BOARD (1/3)
SEE PAGE 4-27
IC601
J001-4
VIDEO LINE OUT 2
ON SCREEN DISPLAY
V OUT
Y/CHROMA PROCESS
PB Y
PB C
IC103
BNJ001
VIDEO LINE OUT
NTSC4.43 → QUASI PAL CONVERSION
SVO-1500
RF 701
SYNC
IN
OUT
RF MODULATOR
IC381
L
R
LEVEL METER
RF CONV OUT
CJ701-1
AUDIO LINE IN L
LINE IN 1 (L)
LINE IN 1 (R)
LINE IN 2 (L)
LINE IN 2 (R)
CJ701-2
AUDIO LINE IN R
SEE PAGE 4-27
MF-282 BOARD (1/3)
J001-2
AUDIO L LINE IN 2
J001-3
AUDIO R LINE IN 2
AM-35 BOARD
SEE PAGE 4-33
IC102
J001-5
AUDIO L LINE OUT 2
LINE OUT L
LINE OUT R
J001-6
AUDIO R LINE OUT 2
MIC AMP
MIC IN
CJ701-3
AUDIO LINE OUT L
CJ701-4
AUDIO LINE OUT R
IC751
RV104
MIC LEVEL
IC101
J751
MIC IN
ALC AMP
MIC AMP
RV102
REC LEVEL L
RV103
REC LEVEL R
MF-280 BOARD
SEE PAGE 4-33
02

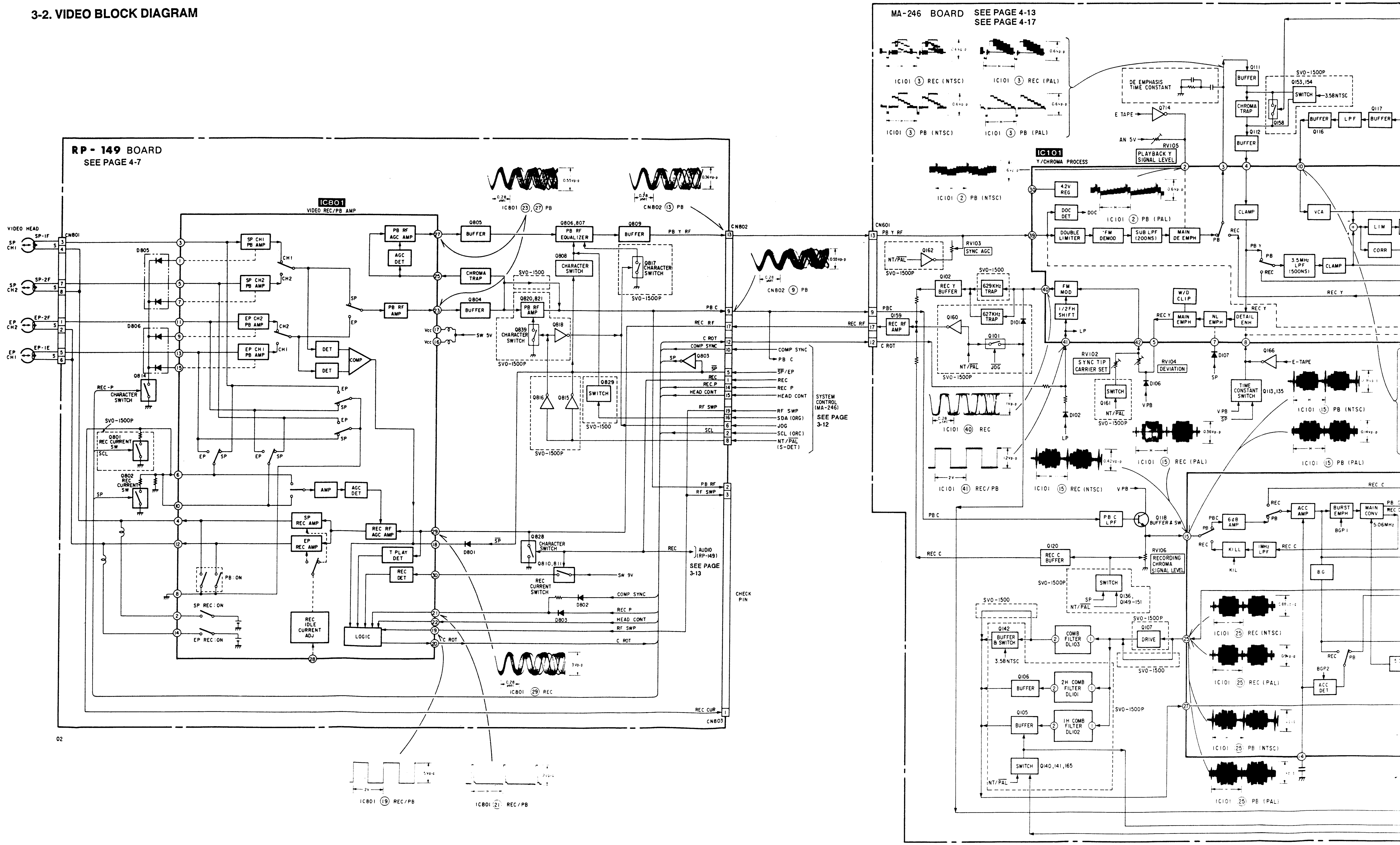
SECTION 3
DIAGRAMS

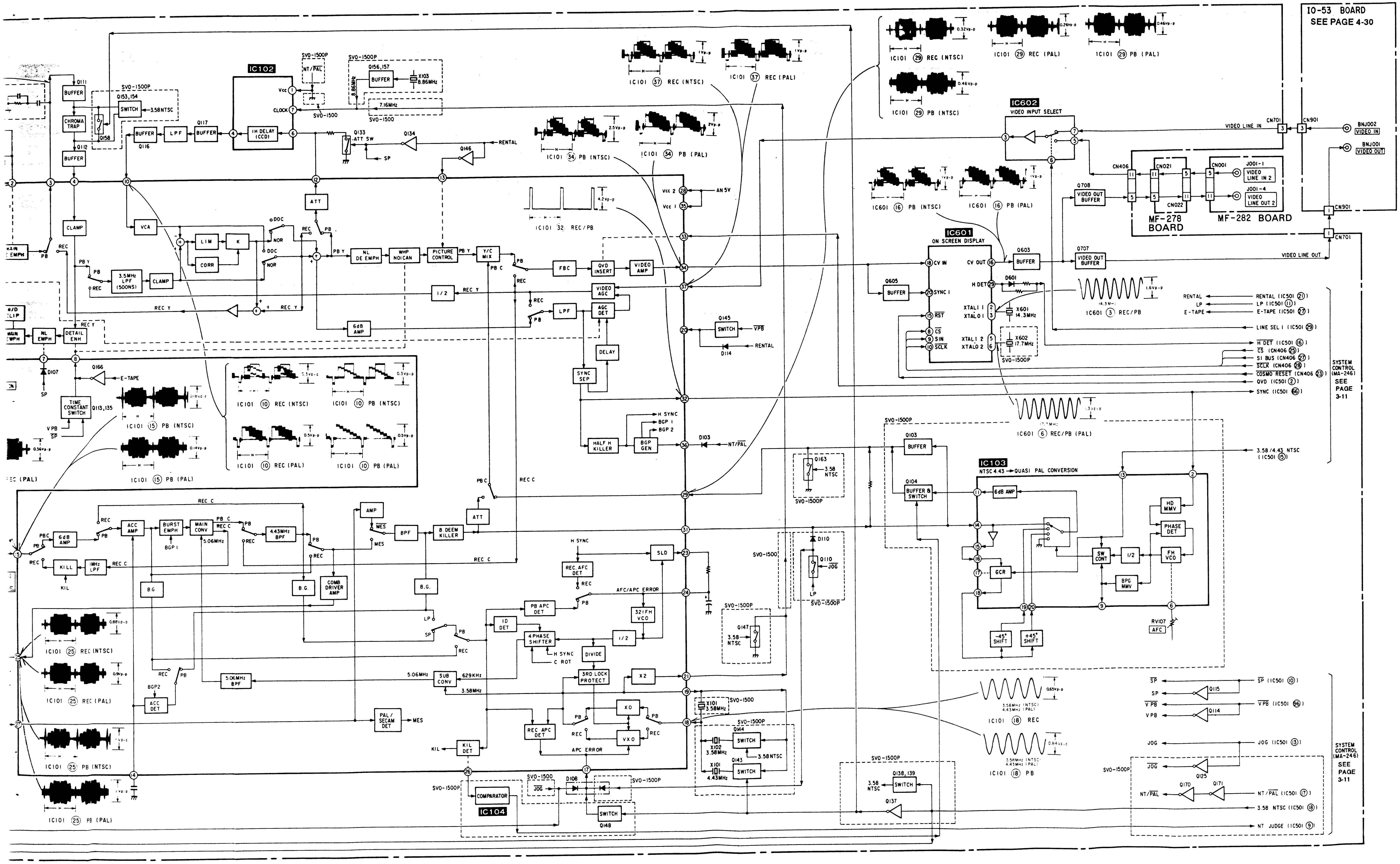
CK DIAGRAM


IO-53 BOARD
SEE PAGE 4-30
MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
RP-149 BOARD
SEE PAGE 4-7
MD BLOCK
SEE PAGE 4-37
BNJ002
VIDEO LINE IN
J001-1
VIDEO LINE IN 2
MF-282 BOARD (1/3)
SEE PAGE 4-27
J001-4
VIDEO LINE OUT 2
BNJ001
VIDEO LINE OUT
IC602
IC101
Y/CHROMA PROCESS
V IN
REC RF
IH DELAY (CCD)
IC102
IC601
ON SCREEN DISPLAY
V OUT
PB Y
PB C
IC103
NTSC4.43→QUASI PAL CONVERSION
SVO-1500P
SYNC
IC801
VIDEO REC/PB AMP
VIDEO HEAD
CH1 SP
CH2 SP
CH1 EP
CH2 EP
IC260
AUDIO REC/PB AMP
HIFI AUDIO HEAD CH-1
HIFI AUDIO HEAD CH-2
CTL HEAD
IC405
CTL REC/PB AMP
PB CTL
REC CTL
Q501,503-506
VIDEO RF ENVELOP DETECT
RF ENV
IC501
SERVO/SYSTEM CONTROL
RF SWP
V SYNC
DRUM SERVO
CAPSTAN SERVO
SYSTEM CONTROL
IC403 (1/2)
DRUM ERROR INTEGRATOR
DRUM D/A
D.VS
M901 DRUM MOTOR
IC406 (1/2)
DRUM PG AMP
DRUM PG
D.PG
DRUM PG SENSOR
DRUM FG
D.FG
DRUM FG SENSOR
IC403 (1/2)
CAPSTAN ERROR INTEGRATOR
CAP D/A
C.VS
M902 CAPSTAN MOTOR
IC406 (1/2)
CAPSTAN FG AMP
CAP FG
FG
CAPSTAN FG SENSOR
IC401
LOADING MOTOR DRIVE
CAM M,P
LOAD (+),(-)
M903 LOADING MOTOR
IC402
REEL FG AMP
TAPE END DETECT
T/S REEL
T/S SENS
T/S REEL FG
T/S END SENSOR
SVO-1500
RF701
IN
OUT
RF MODULATOR
SCLK, SI BUS, CS
LINE SEL 1
LINE SEL 2
L,R
IC381
LEVEL METER
L
R
SCLK,SI BUS, SO SUB,CS, COSMO CS
RF CONV OUT
IC851
AMS AMP
NA OUT
AMS
CJ701-1
AUDIO LINE IN L
CJ701-2
AUDIO LINE IN R
LINE IN 1 (L)
LINE IN 1 (R)
LINE IN 2 (L)
LINE IN 2 (R)
IC201
HIFI AUDIO PROCESS
PB RF
REC RF
SEE PAGE 4-27
MF-282 BOARD (1/3)
J001-2
AUDIO L LINE IN 2
J001-3
AUDIO R LINE IN 2
J001-5
AUDIO L LINE OUT 2
J001-6
AUDIO R LINE OUT 2
AM-35 BOARD
SEE PAGE 4-33
IC102
MIC AMP
LINE OUT L
LINE OUT R
MIC IN
Q301,305, T301,302
BIAS ERASE OSC
ERASE HEAD
FULL ERASE HEAD
NORMAL AUDIO HEAD
CJ701-3
AUDIO LINE OUT L
CJ701-4
AUDIO LINE OUT R
J751
MIC IN
IC751
ALC AMP
RV104
MIC LEVEL
RV102
REC LEVEL L
RV103
REC LEVEL R
IC101
MIC AMP
LEVEL VR Vcc
LEVEL VR L
LEVEL VR R
MF-280 BOARD
SEE PAGE 4-33
SEE PAGE 4-22
HF-27 BOARD
DUAL MODE SHUTTLE
SHUTTLE RING
IC101
MODE CONTROL
SEE PAGE 4-27
MF-282 BOARD (1/3)
IC001
REMOTE CONTROL RECEIVER
FUNCTION SWITCH
ND021
FLUORESCENT INDICATOR TUBE
MF-278 BOARD SEE PAGE 4-27
POWER BLOCK SEE PAGE 4-39
SEE PAGE 4-43
DC 35V
12V
MTR 12V
AN 5V
D 6V
DC 3.2V
DC -30V
RECT
TRANSFORMER
OSC & SWITCH
RECT
LINE FILTER
AC IN

02

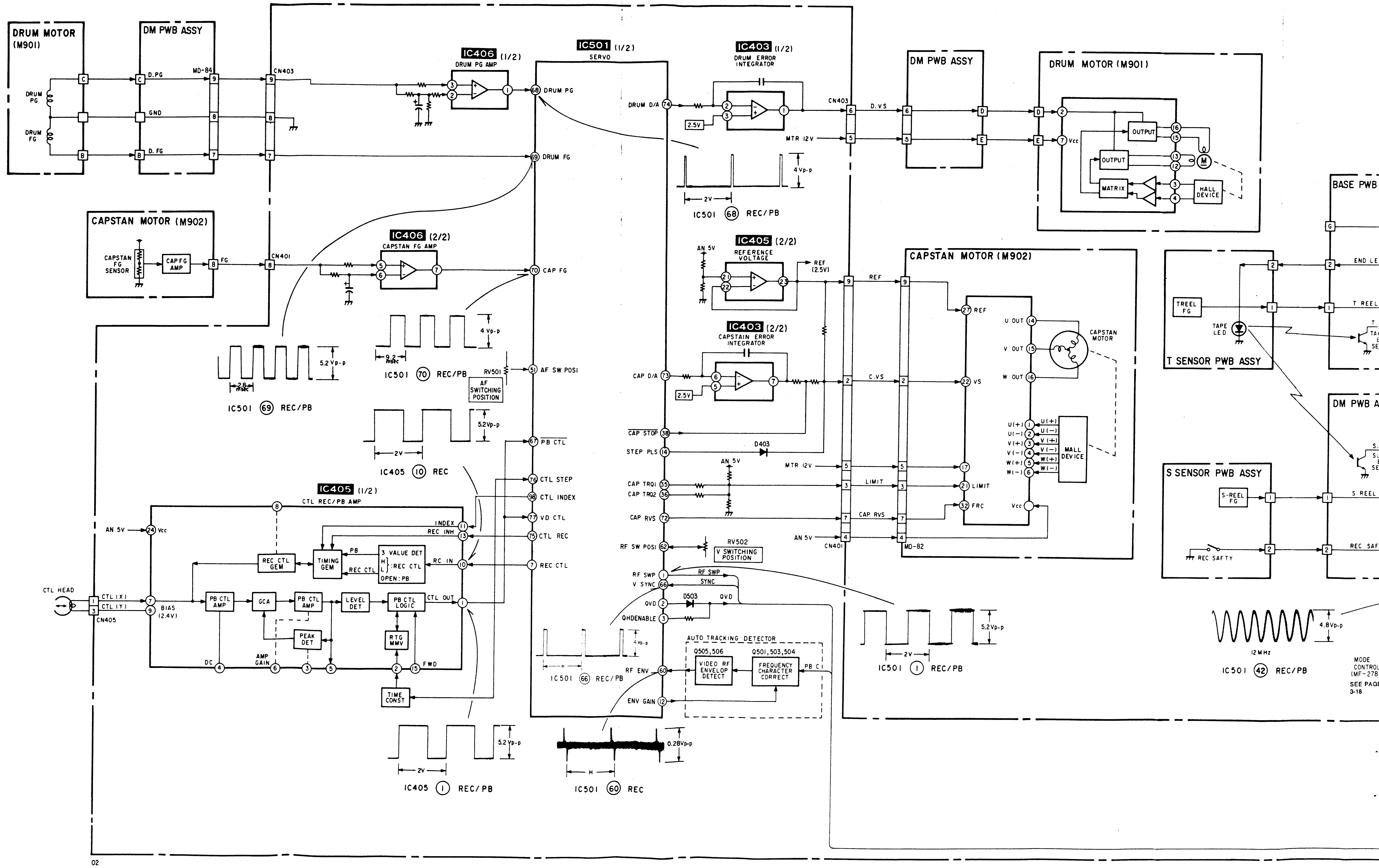
3-2. VIDEO BLOCK DIAGRAM

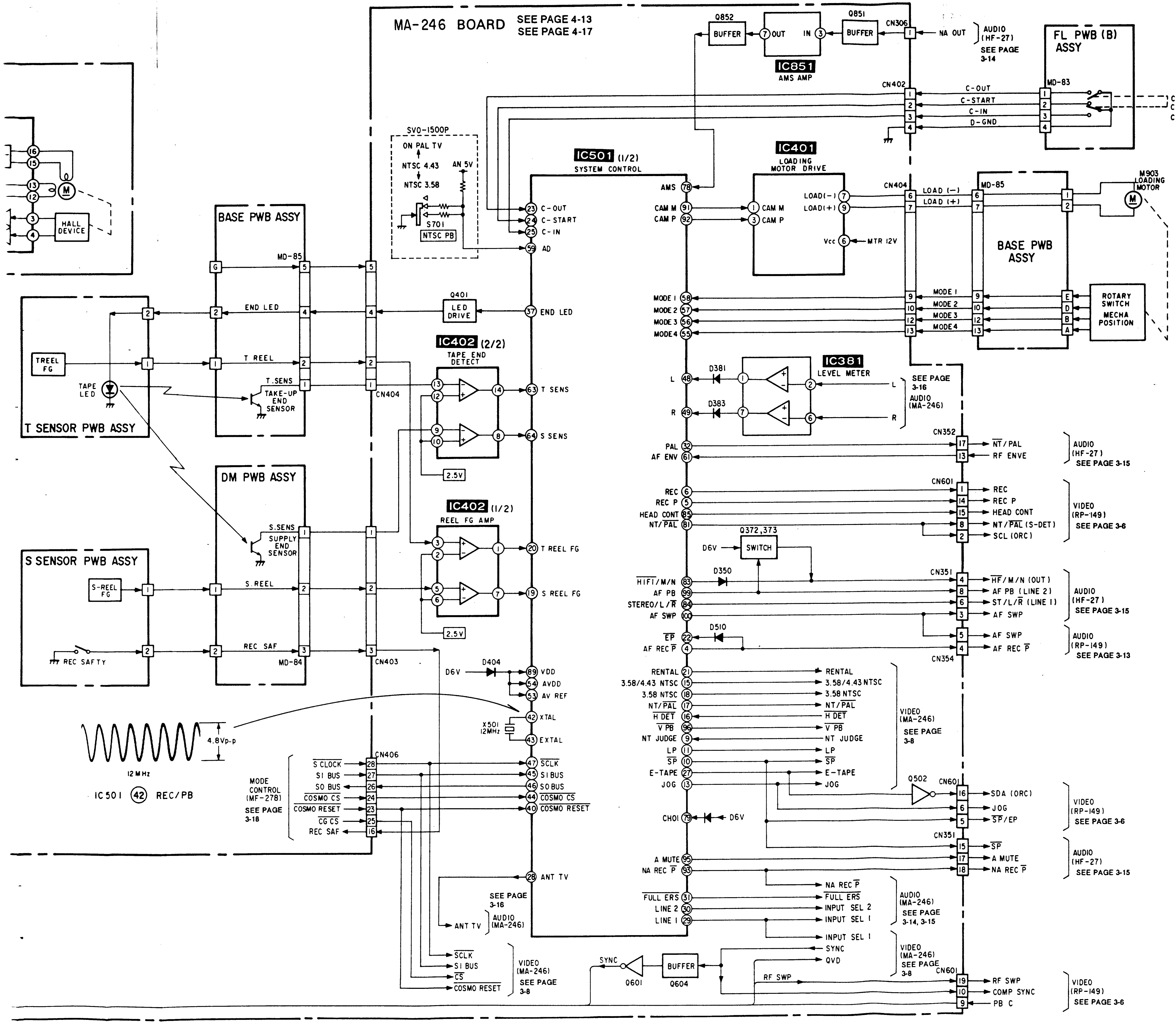

RP-149 BOARD
SEE PAGE 4-7
IC801
VIDEO REC/PB AMP
VIDEO HEAD
SP CH1
SP-1F
SP CH2
SP-2F
EP CH2
EP-2F
EP CH1
EP-1E
CN801
D805
D806
SP CH1 PB AMP
SP CH2 PB AMP
EP CH2 PB AMP
EP CH1 PB AMP
CH1
CH2
SP
EP
PB RF AGC AMP
AGC DET
PB RF AMP
DET
COMP
Q805
BUFFER
CHROMA TRAP
Q804
BUFFER
Q806,807
PB RF EQUALIZER
Q808
CHARACTER SWITCH
Q809
BUFFER
PB Y RF
Q817
CHARACTER SWITCH
SVO-1500
SVO-1500P
Q820,821
PB RF AMP
Q839
CHARACTER SWITCH
Q818
Q816
Q815
Q829
SWITCH
SW 5V
Vcc
IC801 ㉓, ㉗ PB
0.55Vp-p
CN802 ⑬ PB
0.36Vp-p
0.28 μsec
CN802
PB C
REC RF
C ROT
COMP SYNC
SP/EP
REC
REC P
HEAD CONT
RF SWP
SDA (ORG)
JOG
SCL (ORC)
NT/PAL (S-DET)
SYSTEM CONTROL (MA-246)
SEE PAGE 3-12
Q803
CN802 ⑨ PB
REC-P CHARACTER SWITCH
Q814
Q801 REC CURRENT SW
SCL
Q802 REC CURRENT SW
AMP
AGC DET
SP REC AMP
EP REC AMP
REC RF AGC AMP
T PLAY DET
REC DET
REC IDLE CURRENT ADJ
LOGIC
PB:ON
SP REC:ON
EP REC:ON
D801
Q828
CHARACTER SWITCH
Q810,811
REC CURRENT SWITCH
SW 9V
D802
D803
AUDIO (RP-149)
SEE PAGE 3-13
CHECK PIN
PB RF
RF SWP
REC CUR
CN803
IC801 ㉙ REC
3Vp-p
IC801 ⑲ REC/PB
5Vp-p
2V
IC801 ㉑ REC/PB
2Vp-p
MA-246 BOARD SEE PAGE 4-13 SEE PAGE 4-17
IC101 ③ REC (NTSC)
IC101 ③ REC (PAL)
IC101 ③ PB (NTSC)
IC101 ③ PB (PAL)
IC101 ② PB (NTSC)
IC101 ② PB (PAL)
IC101
Y/CHROMA PROCESS
DE EMPHASIS TIME CONSTANT
E TAPE
Q714
AN 5V
RV105
PLAYBACK Y SIGNAL LEVEL
Q111
BUFFER
CHROMA TRAP
Q112
BUFFER
Q153,154
SWITCH
3.58NTSC
Q158
BUFFER
LPF
Q116
Q117
CN601
NT/PAL
Q162
RV103
SYNC AGC
42V REG
DOC DET
DOUBLE LIMITER
FM DEMOD
SUB LPF (200NS)
MAIN DE EMPH
CLAMP
VCA
LIM
CORR
3.5MHz LPF (500NS)
Q102
REC Y BUFFER
629KHz TRAP
627KHz TRAP
Q159
REC RF AMP
Q160
Q101
D101
FM MOD
1/2FH SHIFT
LP
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL ENH
REC Y
RV102
SYNC TIP CARRIER SET
RV104
DEVIATION
D107
D106
D102
Q166
TIME CONSTANT SWITCH
Q113,135
Q161
VPB
IC101 ㊵ REC
IC101 ㊶ REC/PB
IC101 ⑮ REC (NTSC)
IC101 ⑮ REC (PAL)
IC101 ⑮ PB (NTSC)
IC101 ⑮ PB (PAL)
PB C LPF
Q118
BUFFER & SW
Q120
REC C BUFFER
RV106
RECORDING CHROMA SIGNAL LEVEL
6dB AMP
ACC AMP
BURST EMPH
MAIN CONV
BGP1
5.06MHz
KILL
1MHz LPF
KIL
BG
BGP2
ACC DET
SWITCH
Q136, Q149-151
Q142
BUFFER & SWITCH
3.58NTSC
COMB FILTER DL103
Q107
DRIVE
Q106
BUFFER
2H COMB FILTER DL101
Q105
1H COMB FILTER DL102
Q140,141,165
IC101 ㉕ REC (NTSC)
IC101 ㉕ REC (PAL)
IC101 ㉕ PB (NTSC)
IC101 ㉕ PB (PAL)
REC C



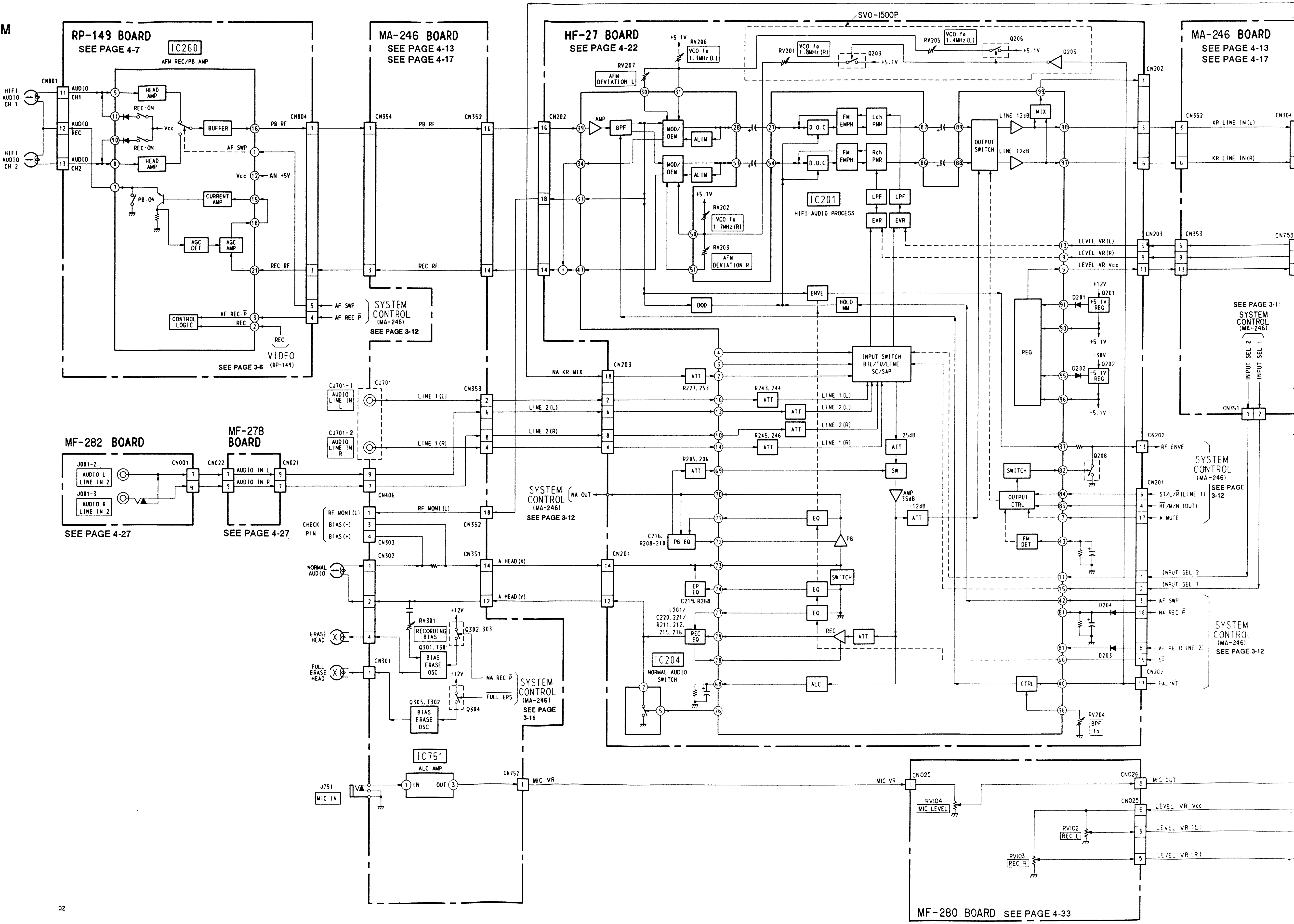
IO-53 BOARD
SEE PAGE 4-30
IC102
1H DELAY (CCD)
Vcc
CLOCK
SVO-1500P
SVO-1500
NT/PAL
Q156,157
BUFFER
X103 8.86MHz
7.16MHz
Q111
BUFFER
CHROMA TRAP
Q112
Q153,154
SWITCH
3.58NTSC
Q158
Q116
LPF
Q117
Q133
ATT SW
Q134
Q146
RENTAL
SP
ATT
CLAMP
VCA
LIM
K
CORR
DOC
NOR
REC
PB
3.5MHz LPF (500NS)
NL DE EMPH
WHP NOI CAN
PICTURE CONTROL
Y/C MIX
FBC
QVD INSERT
VIDEO AMP
VIDEO AGC
AGC DET
LPF
1/2
REC Y
PB Y
PB C
REC C
6dB AMP
DELAY
SYNC SEP
HALF H KILLER
BGP GEN
H SYNC
BGP 1
BGP 2
D103
NT/PAL
Vcc 2
Vcc 1
AN 5V
Q145
SWITCH
VPB
D114
NL EMPH
DETAIL ENH
D107
Q166
E-TAPE
TIME CONSTANT SWITCH
Q113,135
V PB
SP
IC101 (10) REC (NTSC)
IC101 (10) PB (NTSC)
IC101 (10) REC (PAL)
IC101 (10) PB (PAL)
IC101 (15) PB (NTSC)
IC101 (15) PB (PAL)
IC101 (37) REC (NTSC)
IC101 (37) REC (PAL)
IC101 (34) PB (NTSC)
IC101 (34) PB (PAL)
IC101 32 REC/PB
4.2Vp-p
2.5Vp-p
2Vp-p
1Vp-p
ACC AMP
BURST EMPH
MAIN CONV
4.43MHz BPF
5.06MHz
BGP 1
KILL
1MHz LPF
KIL
B.G.
COMB DRIVER AMP
AMP
MES
BPF
B DEEM KILLER
ATT
H SYNC
REC AFC DET
SLD
AFC/APC ERROR
PB APC DET
321FH VCO
ID DET
4 PHASE SHIFTER
C ROT
DIVIDE
1/2
3RD LOCK PROTECT
X2
5.06MHz BPF
SUB CONV
629KHz
3.58MHz
ACC DET
BGP2
PAL/SECAM DET
XO
VXO
REC APC DET
APC ERROR
KIL DET
COMPARATOR
IC104
JOG
D108
SWITCH
Q148
X101 3.58MHz
Q144
X102 3.58MHz
Q143
X101 4.43MHz
3.58NTSC
LP
IC101 (25) REC (NTSC)
IC101 (25) REC (PAL)
IC101 (25) PB (NTSC)
IC101 (25) PB (PAL)
0.88Vp-p
0.9Vp-p
Q163
3.58 NTSC
D110
Q110
JOG
Q147
3.58 NTSC
IC101 (29) REC (NTSC)
IC101 (29) REC (PAL)
IC101 (29) PB (PAL)
IC101 (29) PB (NTSC)
0.32Vp-p
0.26Vp-p
0.46Vp-p
IC602
VIDEO INPUT SELECT
CN701
CN901
VIDEO LINE IN
BNJ002 VIDEO IN
BNJ001 VIDEO OUT
CN406
CN021
CN001
J001-1 VIDEO LINE IN 2
J001-4 VIDEO LINE OUT 2
CN022
MF-278 BOARD
MF-282 BOARD
Q708
VIDEO OUT BUFFER
IC601 (16) PB (NTSC)
IC601 (16) PB (PAL)
IC601
ON SCREEN DISPLAY
CV IN
CV OUT
SYNC I
H DET
RST
CS
SIN
SCLK
XTAL1 1
XTALO 1
XTAL1 2
XTALO 2
Q603
BUFFER
Q605
Q707
D601
X601 14.3MHz
X602 17.7MHz
IC601 (3) REC/PB
IC601 (6) REC/PB (PAL)
1.6Vp-p
VIDEO LINE OUT
RENTAL
LP
E-TAPE
RENTAL (IC501 (21))
LP (IC501 (11))
E-TAPE (IC501 (27))
LINE SEL 1 (IC501 (29))
H DET (IC501 (16))
CS (CN406 (25))
S1 BUS (CN406 (27))
SCLK (CN406 (28))
COSMO RESET (CN406 (23))
QVD (IC501 (2))
SYNC (IC501 (66))
SYSTEM CONTROL (MA-246) SEE PAGE 3-11
Q103
Q104
BUFFER & SWITCH
IC103
NTSC 4.43 → QUASI PAL CONVERSION
6dB AMP
HD MMV
PHASE DET
SW CONT
FH VCO
GCR
BPG MMV
-45° SHIFT
+45° SHIFT
RV107 AFC
3.58/4.43 NTSC (IC501 (15))
IC101 (18) REC
IC101 (18) PB
0.65Vp-p
0.64Vp-p
3.58MHz (NTSC) 4.43MHz (PAL)
Q138,139
Q137
SP (IC501 (10))
VPB (IC501 (96))
Q115
Q114
JOG (IC501 (13))
Q125
Q170
Q171
NT/PAL (IC501 (7))
3.58 NTSC (IC501 (8))
NT JUDGE (IC501 (9))

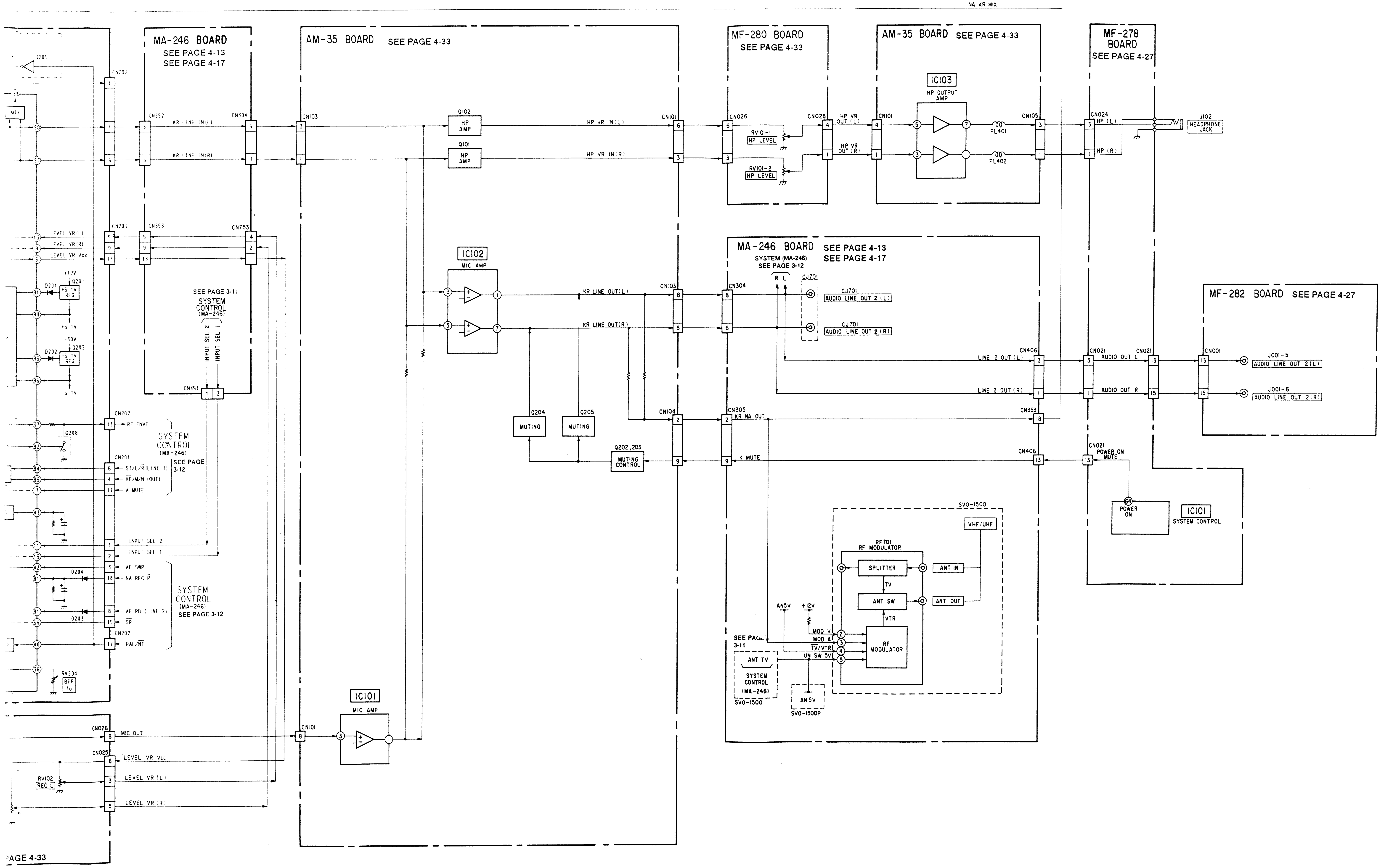
3-3. SERVO/SYSTEM CONTROL BLOCK DIAGRAM


DRUM MOTOR (M901)
DRUM PG
DRUM FG
DM PWB ASSY
D.PG
GND
D. FG
MD-84
CN403
IC406 (1/2)
DRUM PG AMP
IC501 (1/2)
SERVO
DRUM PG
DRUM FG
DRUM D/A
IC403 (1/2)
DRUM ERROR INTEGRATOR
2.5V
D.VS
MTR 12V
4Vp-p
2V
IC501 (68) REC/PB
DM PWB ASSY
DRUM MOTOR (M901)
OUTPUT
MATRIX
HALL DEVICE
Vcc
CAPSTAN MOTOR (M902)
CAPSTAN FG SENSOR
CAP FG AMP
FG
CN401
IC406 (2/2)
CAPSTAN FG AMP
CAP FG
IC405 (2/2)
REFERENCE VOLTAGE
AN 5V
REF (2.5V)
REF
IC403 (2/2)
CAPSTAIN ERROR INTEGRATOR
CAP D/A
C.VS
CAPSTAN MOTOR (M902)
REF
U OUT
V OUT
W OUT
VS
CAPSTAN MOTOR
U(+)
U(−)
V(+)
V(−)
W(+)
W(−)
MALL DEVICE
LIMIT
FRC
Vcc
MD-82
5.2Vp-p
28 msec
IC501 (69) REC/PB
4Vp-p
9.2 msec
IC501 (70) REC/PB
RV501
AF SWITCHING POSITION
AF SW POSI
5.2Vp-p
2V
IC405 (10) REC
PB CTL
CTL STEP
CTL INDEX
VD CTL
CTL REC
REC CTL
CAP STOP
STEP PLS
D403
CAP TRQ1
CAP TRQ2
CAP RVS
RF SW POSI
RV502
V SWITCHING POSITION
RF SWP
V SYNC
SYNC
QVD
D503
QHDENABLE
AUTO TRACKING DETECTOR
Q505,506
VIDEO RF ENVELOP DETECT
Q501,503,504
FREQUENCY CHARACTER CORRECT
PB CI
RF ENV
ENV GAIN
4Vp-p
H
IC501 (66) REC/PB
0.28Vp-p
IC501 (60) REC
IC405 (1/2)
CTL REC/PB AMP
AN 5V
Vcc
INDEX
REC INH
REC CTL GEM
TIMING GEM
PB
3 VALUE DET
H L :REC CTL OPEN:PB
REC CTL
RC IN
CTL HEAD
CTL (X)
CTL (Y)
CN405
BIAS (2.4V)
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL OUT
PEAK DET
RTG MMV
DC
AMP GAIN
FWD
TIME CONST
5.2Vp-p
2V
IC405 (1) REC/PB
5.2Vp-p
2V
IC501 (1) REC/PB
4.8Vp-p
12MHz
IC501 (42) REC/PB
BASE PWB
END LE
T REEL
TREEL FG
TAPE LED
T SENSOR PWB ASSY
DM PWB A
S SENSOR PWB ASSY
S-REEL FG
S REEL
REC SAFTY
REC SAF
MODE CONTROL (MF-278
SEE PAGE 3-18
02

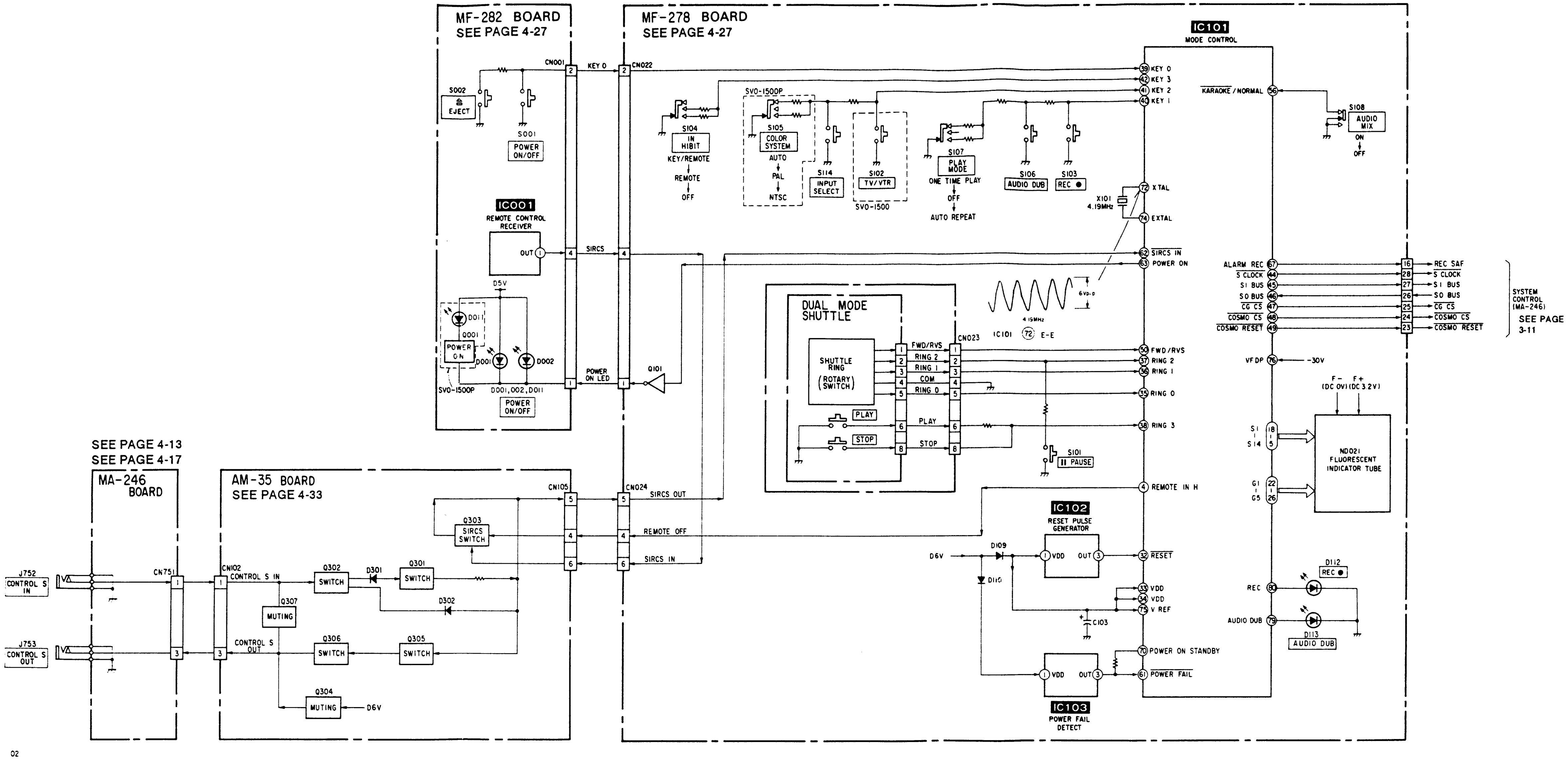

MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
Q852
BUFFER
OUT
IN
Q851
BUFFER
IC851
AMS AMP
CN306
NA OUT
AUDIO
(HF-27)
SEE PAGE
3-14
FL PWB (B)
ASSY
MD-83
CN402
C-OUT
C-START
C-IN
D-GND
C-OUT
C-START
C-IN
SVO-1500P
ON PAL TV
NTSC 4.43
NTSC 3.58
AN 5V
S701
NTSC PB
IC501 (1/2)
SYSTEM CONTROL
IC401
LOADING
MOTOR DRIVE
AMS
CAM M
CAM P
C-OUT
C-START
C-IN
AD
LOAD(-)
LOAD(+)
Vcc
MTR 12V
CN404
LOAD (-)
LOAD (+)
MD-85
M903
LOADING
MOTOR
BASE PWB
ASSY
HALL
DEVICE
BASE PWB ASSY
MD-85
END LED
T REEL
T.SENS
TAKE-UP
END
SENSOR
TREEL
FG
TAPE
LED
T SENSOR PWB ASSY
CN404
Q401
LED
DRIVE
END LED
IC402 (2/2)
TAPE END
DETECT
T SENS
S SENS
2.5V
MODE 1
MODE 2
MODE 3
MODE 4
ROTARY
SWITCH
MECHA
POSITION
IC381
LEVEL METER
D381
D383
L
R
SEE PAGE
3-16
AUDIO
(MA-246)
CN352
PAL
AF ENV
NT/PAL
RF ENVE
AUDIO
(HF-27)
SEE PAGE 3-15
DM PWB ASSY
S.SENS
SUPPLY
END
SENSOR
IC402 (1/2)
REEL FG AMP
T REEL FG
S REEL FG
S SENSOR PWB ASSY
S-REEL
FG
S REEL
REC SAF
REC SAFTY
MD-84
CN403
CN601
REC
REC P
HEAD CONT
NT/PAL
NT/PAL (S-DET)
SCL (ORC)
VIDEO
(RP-149)
SEE PAGE 3-6
Q372,373
SWITCH
D6V
D350
CN351
HIFI/M/N
AF PB
STEREO/L/R
AF SWP
HF/M/N (OUT)
AF PB (LINE 2)
ST/L/R (LINE 1)
AF SWP
D510
EP
AF REC P
AUDIO
(RP-149)
SEE PAGE 3-13
CN354
D404
D6V
VDD
AVDD
AV REF
XTAL
EXTAL
X501
12MHz
4.8Vp-p
12MHz
IC501 42 REC/PB
RENTAL
3.58/4.43 NTSC
3.58 NTSC
NT/PAL
H DET
V PB
NT JUDGE
LP
SP
E-TAPE
JOG
VIDEO
(MA-246)
SEE PAGE
3-8
Q502
SDA (ORC)
JOG
SP/EP
CHO1
CN406
MODE
CONTROL
(MF-278)
SEE PAGE
3-18
S CLOCK
SI BUS
SO BUS
COSMO CS
COSMO RESET
CG CS
REC SAF
SCLK
SI BUS
SO BUS
COSMO CS
COSMO RESET
A MUTE
NA REC P
SP
A MUTE
NA REC P
AUDIO
(HF-27)
SEE PAGE 3-15
ANT TV
SEE PAGE
3-16
AUDIO
(MA-246)
ANT TV
NA REC P
FULL ERS
LINE 2
LINE 1
FULL ERS
INPUT SEL 2
INPUT SEL 1
INPUT SEL 1
AUDIO
(MA-246)
SEE PAGE
3-14, 3-15
SYNC
QVD
VIDEO
(MA-246)
SEE PAGE
3-8
SCLK
SI BUS
CS
COSMO RESET
VIDEO
(MA-246)
SEE PAGE
3-8
SYNC
Q601
BUFFER
Q604
RF SWP
RF SWP
COMP SYNC
PB C
VIDEO
(RP-149)
SEE PAGE 3-6

3-4. AUDIO BLOCK DIAGRAM

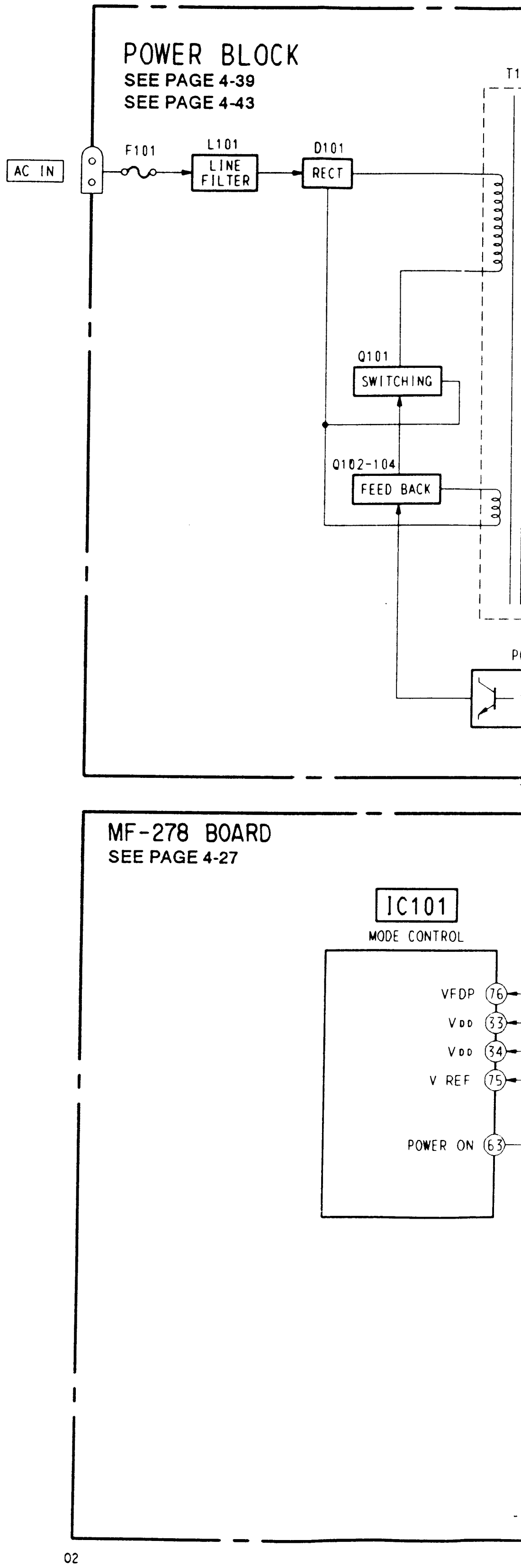

RP-149 BOARD
SEE PAGE 4-7
IC260
AFM REC/PB AMP
HIFI AUDIO CH 1
HIFI AUDIO CH 2
CN801
AUDIO CH1
AUDIO REC
AUDIO CH2
HEAD AMP
REC ON
BUFFER
PB ON
CURRENT AMP
AGC DET
AGC AMP
CONTROL LOGIC
PB RF
AF SWP
Vcc
AN +5V
REC RF
AF REC P
REC
CN804
VIDEO (RP-149)
SEE PAGE 3-6
MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
CN354
CN352
SYSTEM CONTROL (MA-246)
SEE PAGE 3-12
CJ701-1
AUDIO LINE IN L
CJ701-2
AUDIO LINE IN R
LINE 1 (L)
LINE 1 (R)
LINE 2 (L)
LINE 2 (R)
CN353
MF-282 BOARD
J001-2
AUDIO L LINE IN 2
J001-3
AUDIO R LINE IN 2
CN001
SEE PAGE 4-27
MF-278 BOARD
CN022
AUDIO IN L
AUDIO IN R
CN021
SEE PAGE 4-27
CN406
CHECK PIN
RF MONI (L)
BIAS (-)
BIAS (+)
CN303
CN302
NORMAL AUDIO
CN351
A HEAD (X)
A HEAD (Y)
ERASE HEAD
FULL ERASE HEAD
RV301
RECORDING BIAS
Q301, T301
BIAS ERASE OSC
Q302, 303
+12V
NA REC P
FULL ERS
Q305, T302
BIAS ERASE OSC
Q304
SYSTEM CONTROL (MA-246)
SEE PAGE 3-11
CN301
IC751
ALC AMP
IN
OUT
J751
MIC IN
CN752
MIC VR
SVO-1500P
HF-27 BOARD
SEE PAGE 4-22
+5.1V
RV206
VCO fo 1.3MHz (L)
RV207
AFM DEVIATION L
RV201
VCO fo 1.8MHz (R)
Q203
RV205
VCO fo 1.4MHz (L)
Q206
Q205
CN202
AMP
BPF
MOD/DEM
ALIM
D.O.C
FM EMPH
Lch PNR
Rch PNR
OUTPUT SWITCH
LINE 12dB
MIX
IC201
HIFI AUDIO PROCESS
LPF
EVR
RV202
VCO fo 1.7MHz (R)
RV203
AFM DEVIATION R
DOD
ENVE
HOLD MM
LEVEL VR (L)
LEVEL VR (R)
LEVEL VR Vcc
CN203
D201
Q201
+5.1V REG
REG
D202
Q202
-5.1V REG
-30V
-5.1V
NA KR MIX
ATT
R227, 253
INPUT SWITCH BIL/TU/LINE SC/SAP
R243, 244
R245, 246
R205, 206
-25dB
SW
AMP 35dB
-12dB
SYSTEM CONTROL (MA-246)
NA OUT
SEE PAGE 3-12
EQ
PB
C216, R208-210
PB EQ
SWITCH
CN201
EP EQ
C219, R268
L201/ C220, 221/ R211, 212, 215, 216
REC EQ
IC204
NORMAL AUDIO SWITCH
ALC
RF ENVE
Q208
OUTPUT CTRL
FM DET
D204
D203
CTRL
RV204
BPF fo
ST/L/R (LINE 1)
HF/M/N (OUT)
A MUTE
INPUT SEL 2
INPUT SEL 1
AF SWP
NA REC P
AF PB (LINE 2)
SE
PAL/NT
SYSTEM CONTROL (MA-246)
SEE PAGE 3-12
MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
CN352
KR LINE IN (L)
KR LINE IN (R)
CN304
CN353
CN753
SEE PAGE 3-11
SYSTEM CONTROL (MA-246)
INPUT SEL 2
INPUT SEL 1
CN351
MF-280 BOARD
SEE PAGE 4-33
CN025
MIC VR
RV104
MIC LEVEL
CN026
MIC OUT
LEVEL VR Vcc
RV102
REC L
LEVEL VR (L)
RV103
REC R
LEVEL VR (R)
02


NA KR MIX
MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
AM-35 BOARD SEE PAGE 4-33
MF-280 BOARD
SEE PAGE 4-33
AM-35 BOARD SEE PAGE 4-33
MF-278 BOARD
SEE PAGE 4-27
CN202
CN352
CN504
CN103
KR LINE IN(L)
KR LINE IN(R)
Q102
HP AMP
Q101
HP AMP
HP VR IN(L)
HP VR IN(R)
CN101
CN026
RV101-1
HP LEVEL
RV101-2
HP LEVEL
HP VR OUT(L)
HP VR OUT(R)
IC103
HP OUTPUT AMP
FL401
FL402
CN105
CN024
HP (L)
HP (R)
J102
HEADPHONE JACK
CN203
CN353
CN753
LEVEL VR(L)
LEVEL VR(R)
LEVEL VR Vcc
+12V
D201
Q201
+5.1V REG
+5.1V
-30V
D202
Q202
-5.1V REG
-5.1V
SEE PAGE 3-11
SYSTEM CONTROL
(MA-246)
INPUT SEL 2
INPUT SEL 1
CN351
IC102
MIC AMP
KR LINE OUT(L)
KR LINE OUT(R)
CN103
CN104
MA-246 BOARD SEE PAGE 4-13
SEE PAGE 4-17
SYSTEM (MA-246)
SEE PAGE 3-12
R L
CN304
CJ701
CJ701
AUDIO LINE OUT 2 (L)
AUDIO LINE OUT 2 (R)
MF-282 BOARD SEE PAGE 4-27
CN406
LINE 2 OUT (L)
LINE 2 OUT (R)
CN021
AUDIO OUT L
AUDIO OUT R
CN001
J001-5
AUDIO LINE OUT 2(L)
J001-6
AUDIO LINE OUT 2(R)
CN202
RF ENVE
Q208
SYSTEM CONTROL
(MA-246)
SEE PAGE 3-12
CN201
ST/L/R̄ (LINE 1)
HF/M/N (OUT)
A MUTE
Q204
MUTING
Q205
MUTING
Q202,203
MUTING CONTROL
CN305
KR NA OUT
CN353
K MUTE
CN406
CN021
POWER ON MUTE
POWER ON
IC101
SYSTEM CONTROL
INPUT SEL 2
INPUT SEL 1
AF SWP
D204
NA REC P̄
SYSTEM CONTROL
(MA-246)
SEE PAGE 3-12
AF PB (LINE 2)
D203
S̄P̄
CN202
PAL/N̄T̄
RV204
BPF fo
SVO-1500
VHF/UHF
RF701
RF MODULATOR
SPLITTER
ANT IN
TV
ANT SW
ANT OUT
VTR
AN5V
+12V
MOD V
MOD A
T̄V̄/VTR
UN SW 5V
RF MODULATOR
SEE PAGE 3-11
ANT TV
SYSTEM CONTROL
(MA-246)
SVO-1500
AN5V
SVO-1500P
IC101
MIC AMP
CN026
MIC OUT
CN101
CN025
LEVEL VR Vcc
RV102
REC L
LEVEL VR (L)
LEVEL VR (R)
PAGE 4-33

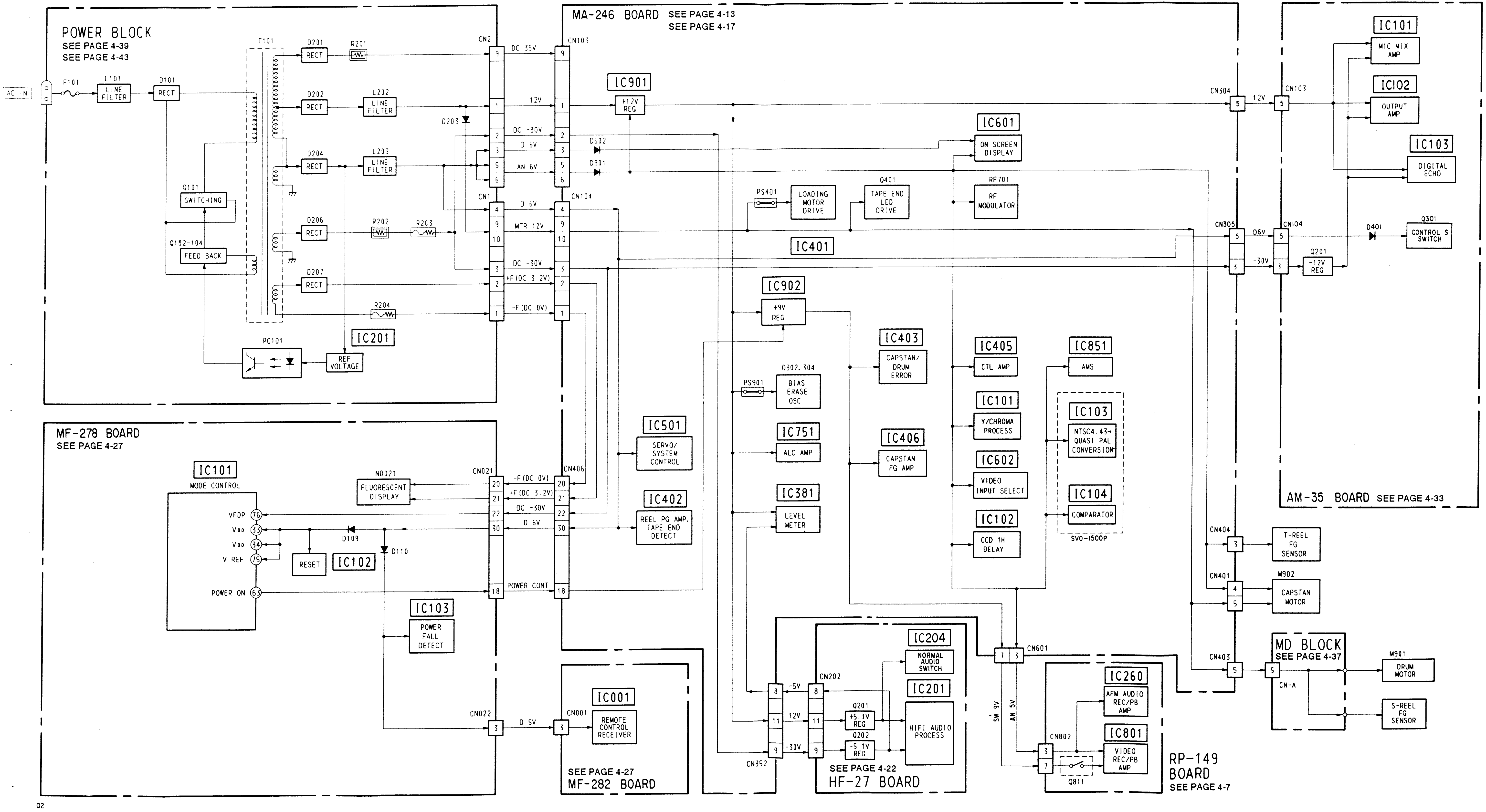
3-5. MODE CONTROL BLOCK DIAGRAM


MF-282 BOARD
SEE PAGE 4-27
MF-278 BOARD
SEE PAGE 4-27
CN001
KEY 0
CN022
S002
EJECT
S001
POWER ON/OFF
IC001
REMOTE CONTROL RECEIVER
OUT
SIRCS
D5V
D011
Q001
POWER ON
D001
D002
SVO-1500P
D001,002,D011
POWER ON/OFF
POWER ON LED
Q101
S104
IN HIBIT
KEY/REMOTE
REMOTE
OFF
SVO-1500P
S105
COLOR SYSTEM
AUTO
PAL
NTSC
S114
INPUT SELECT
S102
TV/VTR
SVO-1500
S107
PLAY MODE
ONE TIME PLAY
OFF
AUTO REPEAT
S106
AUDIO DUB
S103
REC ●
IC101
MODE CONTROL
KEY 0
KEY 3
KEY 2
KEY 1
KARAOKE/NORMAL
S108
AUDIO MIX
ON
OFF
XTAL
X101
4.19MHz
EXTAL
SIRCS IN
POWER ON
6Vp-p
4.19MHz
IC101 72 E-E
DUAL MODE SHUTTLE
SHUTTLE RING
(ROTARY SWITCH)
PLAY
STOP
CN023
FWD/RVS
RING 2
RING 1
COM
RING 0
RING 3
S101
II PAUSE
ALARM REC
S CLOCK
SI BUS
SO BUS
CG CS
COSMO CS
COSMO RESET
REC SAF
S CLOCK
SI BUS
SO BUS
CG CS
COSMO CS
COSMO RESET
SYSTEM CONTROL (MA-246)
SEE PAGE 3-11
VFDP
-30V
F- F+
(DC 0V)(DC 3.2V)
S1
S14
G1
G5
ND021
FLUORESCENT INDICATOR TUBE
REMOTE IN H
IC102
RESET PULSE GENERATOR
D6V
D109
D110
VDD
OUT
RESET
VDD
VDD
V REF
C103
POWER ON STANDBY
POWER FAIL
IC103
POWER FAIL DETECT
REC
AUDIO DUB
D112
REC ●
D113
AUDIO DUB
SEE PAGE 4-13
SEE PAGE 4-17
MA-246 BOARD
AM-35 BOARD
SEE PAGE 4-33
CN105
CN024
SIRCS OUT
REMOTE OFF
SIRCS IN
Q303
SIRCS SWITCH
J752
CONTROL S IN
J753
CONTROL S OUT
CN751
CN102
CONTROL S IN
Q302
SWITCH
D301
Q301
SWITCH
Q307
MUTING
D302
CONTROL S OUT
Q306
SWITCH
Q305
SWITCH
Q304
MUTING
D6V
02

3-6. POWER BLOCK DIAGRAM

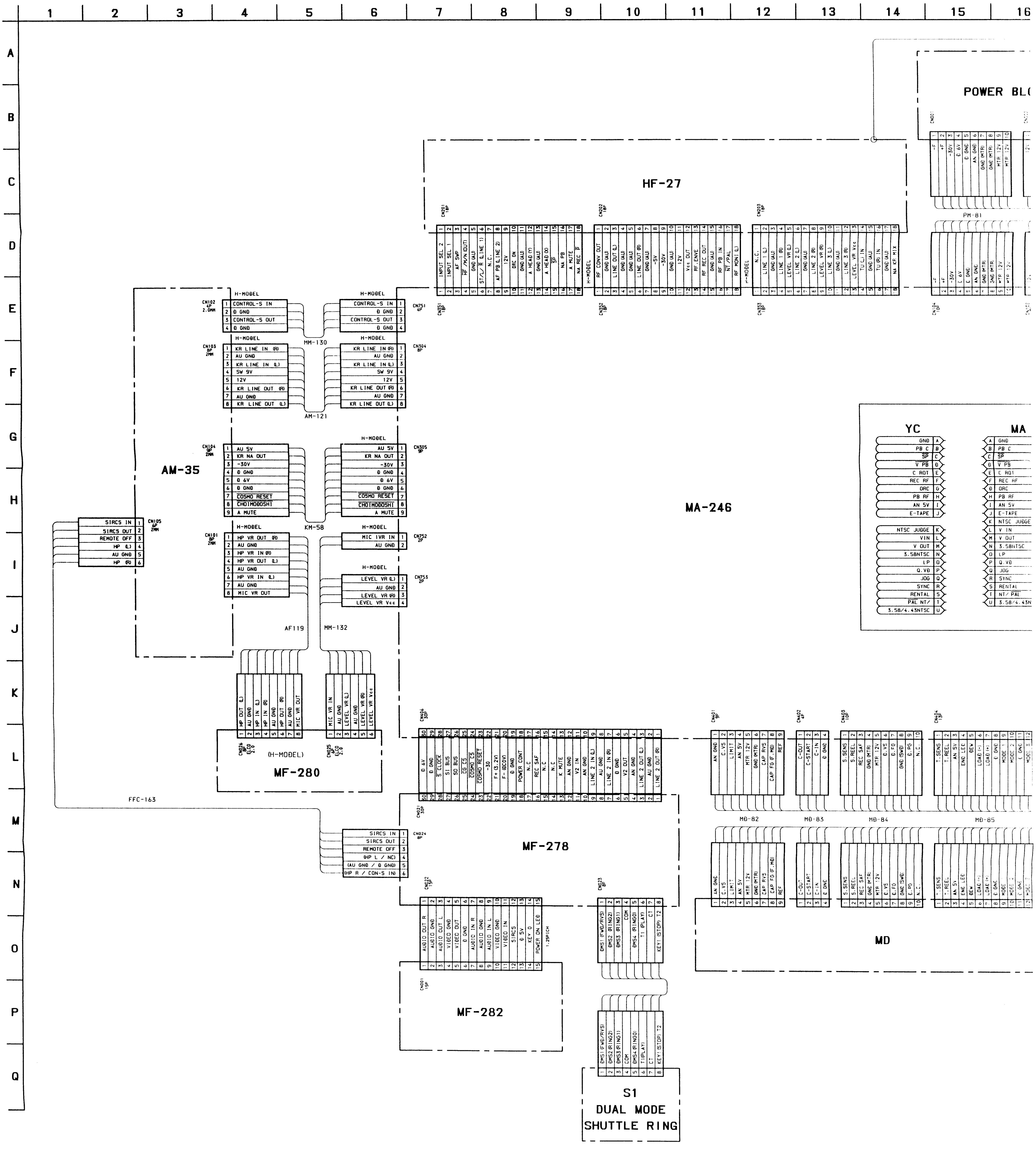

POWER BLOCK
SEE PAGE 4-39
SEE PAGE 4-43
T1
AC IN
F101
L101
LINE FILTER
D101
RECT
Q101
SWITCHING
Q102-104
FEED BACK
MF-278 BOARD
SEE PAGE 4-27
IC101
MODE CONTROL
VFDP 76
VDD 33
VDD 34
V REF 75
POWER ON 63
02

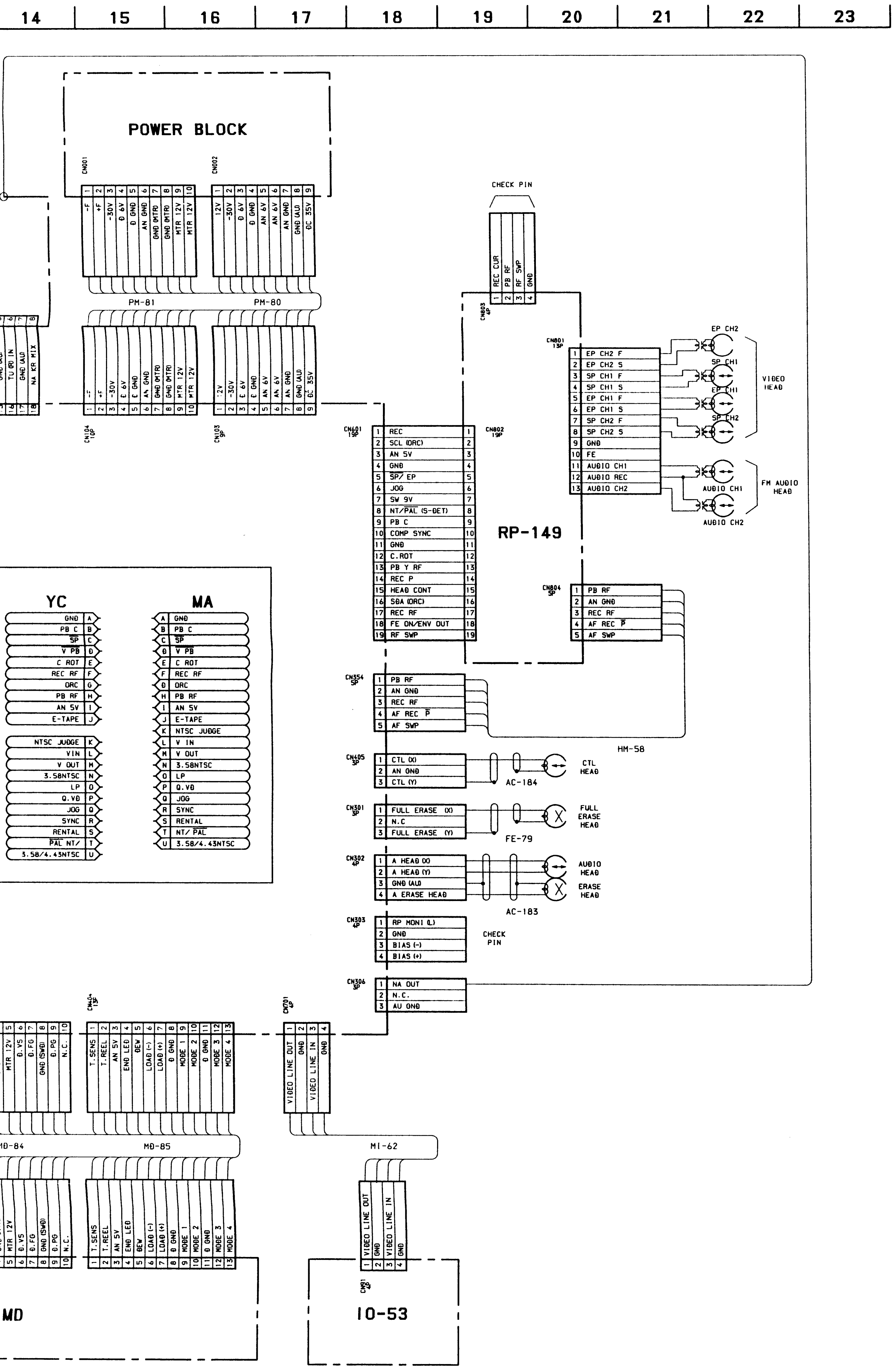
3-6. POWER BLOCK DIAGRAM


POWER BLOCK
SEE PAGE 4-39
SEE PAGE 4-43
AC IN
F101
L101
LINE FILTER
D101
RECT
T101
D201
RECT
R201
D202
RECT
L202
LINE FILTER
D203
D204
RECT
L203
LINE FILTER
Q101
SWITCHING
Q102-104
FEED BACK
D206
RECT
R202
R203
D207
RECT
R204
PC101
IC201
REF VOLTAGE
CN2
DC 35V
12V
DC -30V
D 6V
AN 6V
CN1
D 6V
MTR 12V
DC -30V
+F (DC 3.2V)
-F (DC 0V)
MA-246 BOARD
SEE PAGE 4-13
SEE PAGE 4-17
CN103
CN104
IC901
+12V REG
D602
D901
IC601
ON SCREEN DISPLAY
RF701
RF MODULATOR
PS401
LOADING MOTOR DRIVE
Q401
TAPE END LED DRIVE
IC401
IC902
+9V REG
PS901
Q302, 304
BIAS ERASE OSC
IC403
CAPSTAN/DRUM ERROR
IC405
CTL AMP
IC851
AMS
IC101
Y/CHROMA PROCESS
IC103
NTSC4.43→QUASI PAL CONVERSION
IC602
VIDEO INPUT SELECT
IC104
COMPARATOR
IC102
CCD 1H DELAY
SVO-1500P
IC501
SERVO/SYSTEM CONTROL
IC751
ALC AMP
IC406
CAPSTAN FG AMP
IC402
REEL PG AMP, TAPE END DETECT
IC381
LEVEL METER
CN406
MF-278 BOARD
SEE PAGE 4-27
IC101
MODE CONTROL
VFDP 76
VDD 33
VDD 34
V REF 75
POWER ON 63
ND021
FLUORESCENT DISPLAY
CN021
-F (DC 0V)
+F (DC 3.2V)
DC -30V
D 6V
POWER CONT
D109
D110
RESET
IC102
IC103
POWER FALL DETECT
CN022
D 5V
CN001
IC001
REMOTE CONTROL RECEIVER
SEE PAGE 4-27
MF-282 BOARD
CN352
-5V
12V
-30V
CN202
IC204
NORMAL AUDIO SWITCH
IC201
HIFI AUDIO PROCESS
Q201
+5.1V REG
Q202
-5.1V REG
SEE PAGE 4-22
HF-27 BOARD
CN601
SW 9V
AN 5V
CN802
Q811
IC260
AFM AUDIO REC/PB AMP
IC801
VIDEO REC/PB AMP
RP-149 BOARD
SEE PAGE 4-7
CN304
12V
CN305
D6V
-30V
CN404
T-REEL FG SENSOR
CN401
M902
CAPSTAN MOTOR
CN403
MD BLOCK
SEE PAGE 4-37
CN-A
M901
DRUM MOTOR
S-REEL FG SENSOR
AM-35 BOARD SEE PAGE 4-33
CN103
CN104
IC101
MIC MIX AMP
IC102
OUTPUT AMP
IC103
DIGITAL ECHO
D401
Q301
CONTROL S SWITCH
Q201
-12V REG
02

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAM SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
POWER BL
HF-27
PM-81
AM-35
MA-246
YC
MA
MM-130
AM-121
KM-58
AF119
MM-132
MF-280
(H-MODEL)
MF-278
MF-282
FFC-163
MD-82
MD-83
MD-84
MD-85
MD
S1
DUAL MODE
SHUTTLE RING
H-MODEL
SIRCS IN
SIRCS OUT
REMOTE OFF
HP (L)
AU GND
HP (R)
CONTROL-S IN
D GND
CONTROL-S OUT
KR LINE IN (R)
KR LINE IN (L)
SW 9V
12V
KR LINE OUT (R)
KR LINE OUT (L)
AU 5V
KR NA OUT
-30V
D 6V
COSMO RESET
CHOIMODOSHI
A MUTE
HP VR OUT (R)
HP VR IN (R)
HP VR OUT (L)
HP VR IN (L)
MIC VR OUT
MIC IVR IN
LEVEL VR (L)
LEVEL VR (R)
LEVEL VR Vcc


14
15
16
17
18
19
20
21
22
23
POWER BLOCK
CN001
CN002
PM-81
PM-80
CN104 10P
CN103 9P
+F
-30V
D 6V
D GND
AN GND
GND (MTR)
MTR 12V
12V
AN 6V
GND (AU)
DC 35V
E 6V
E GND
CHECK PIN
REC CUR
PB RF
RF SWP
GND
CN803 4P
CN801 13P
EP CH2 F
EP CH2 S
SP CH1 F
SP CH1 S
EP CH1 F
EP CH1 S
SP CH2 F
SP CH2 S
FE
AUDIO CH1
AUDIO REC
AUDIO CH2
EP CH2
SP CH1
EP CH1
SP CH2
VIDEO HEAD
AUDIO CH1
AUDIO CH2
FM AUDIO HEAD
CN601 19P
CN802 19P
REC
SCL (DRC)
AN 5V
SP/EP
JOG
SW 9V
NT/PAL (S-DET)
PB C
COMP SYNC
C.ROT
PB Y RF
REC P
HEAD CONT
SBA (DRC)
REC RF
FE ON/ENV OUT
RF SWP
RP-149
CN804 5P
PB RF
AN GND
AF REC P
AF SWP
CN354 5P
HM-58
CN405 3P
CTL (X)
CTL (Y)
AC-184
CTL HEAD
CN301 3P
FULL ERASE (X)
N.C
FULL ERASE (Y)
FE-79
FULL ERASE HEAD
CN302 4P
A HEAD (X)
A HEAD (Y)
GND (AU)
A ERASE HEAD
AC-183
AUDIO HEAD
ERASE HEAD
CN303 4P
RP MONI (L)
BIAS (-)
BIAS (+)
CHECK PIN
CN304 3P
NA OUT
N.C.
AU GND
YC
MA
GND
V PB
C ROT
REC RF
DRC
PB RF
AN 5V
E-TAPE
NTSC JUDGE
V IN
V OUT
3.58NTSC
LP
Q.VD
JOG
SYNC
RENTAL
NT/PAL
3.58/4.43NTSC
MD-84
MD-85
MTR 12V
D.VS
D.FG
GND (SWD)
D.PG
N.C.
T.SENS
T.REEL
AN 5V
END LED
BEW
LOAD (-)
LOAD (+)
D GND
MODE 1
MODE 2
MODE 3
MODE 4
CN702 4P
VIDEO LINE OUT
VIDEO LINE IN
MI-62
MD
IO-53
TU (R) IN
GND (AU)
NA CR MIX

4-2. PRINTED WRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- o—— : indicates a lead wire mounted on the componet side.
- ● : Through hole.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- Circled numbers refer to waveforms.

Caution:

Pattern face side: (Conductor side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ :1000 Ω , MΩ :1000kΩ .
- All capacitors are in μF unless otherwise noted. pF : uμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammeble resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ▬▬ : B+ line.*
- ▬ ▬ ▬ : B − line.*
- ⇨ : IN/OUT direction of (+, −) B LINE.*
- Circled numbers refer to waveforms.*
- Voltages are dc between ground and measurement points.*
- Reading are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC 10M Ω).*
- Voltages are takeen with a VOM (Input impedance 10M Ω).*
- Voltag variations may be noted due to normal production tolerances.*

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

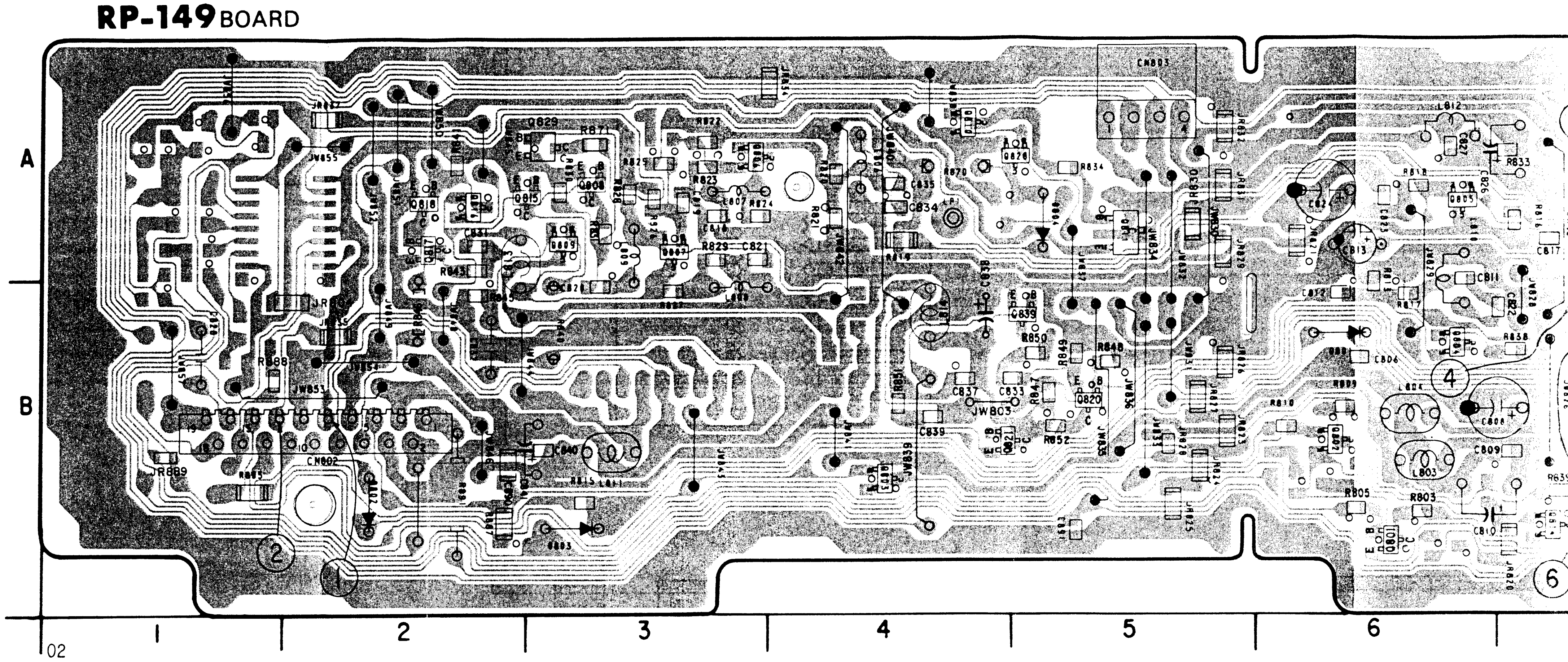
- ∗ : Indicated by the color red.

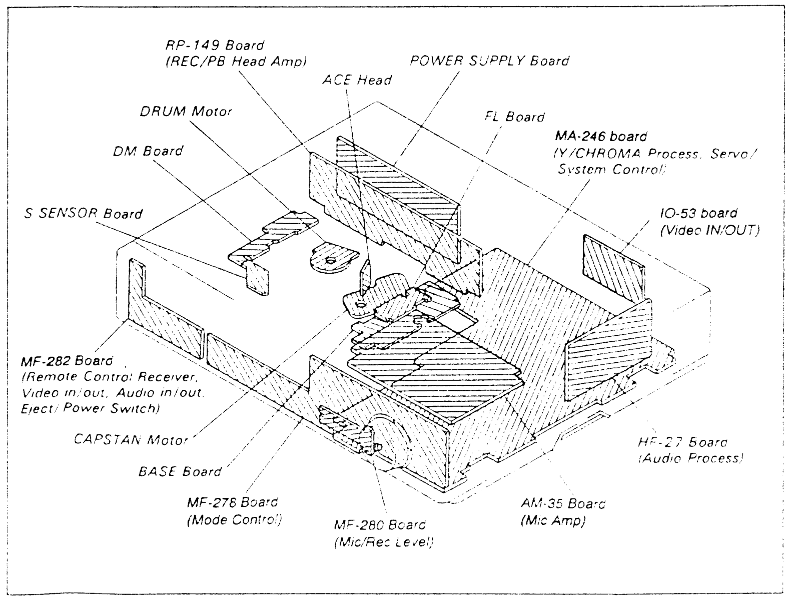
RP-149 (REC/PB HEAD AMP) PRINTED WIRING BOARD

– Ref. No. RP-149 BOARD : 6,000 Series –

RP-149 BOARD

CN801	B-1
CN802	B-2
CN803	A-5
CN804	A-9
D801	B-6
D802	B-2
D803	B-3
D804	A-5
D805	A-7
D806	B-7
IC260	B-9
IC801	B-7
Q801	B-6
Q802	B-6
Q803	B-4
Q804	B-6
Q805	A-6
Q806	A-3
Q807	A-3
Q808	A-3
Q809	A-3
Q810	A-4
Q811	A-5
Q814	B-7
Q815	A-2
Q816	A-2
Q817	A-2
Q818	A-2
Q820	B-5
Q821	B-4
Q828	A-5
Q829	A-3
Q839	B-5

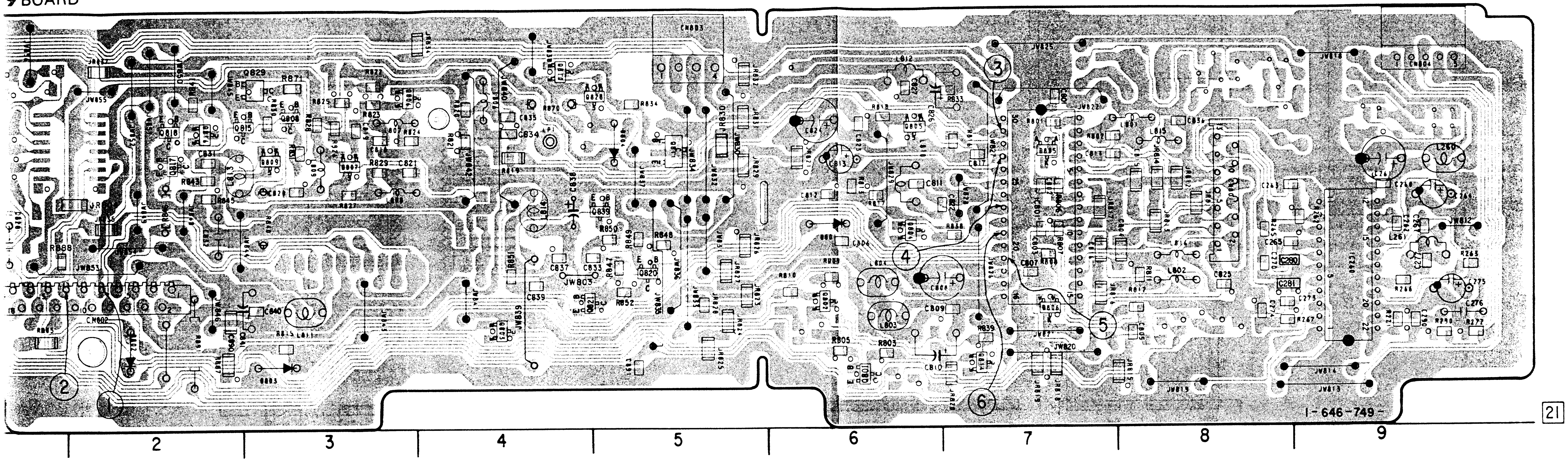

RP-149 BOARD
A
B
1
2
3
4
5
6
02
CN802
CN803
JW855
JW853
JW803
JW836
JW839
Q829
Q818
Q815
Q820
Q821
R871
R822
R823
R829
C821
C834
C835
C837
C833
C839
R850
R848
R849
R847
R852
R870
R834
R889
R888
L812
R833
R818
C817
C811
R838
C806
C808
C809
L803
R805
R803
C810
B
C
E
4
6
2
1

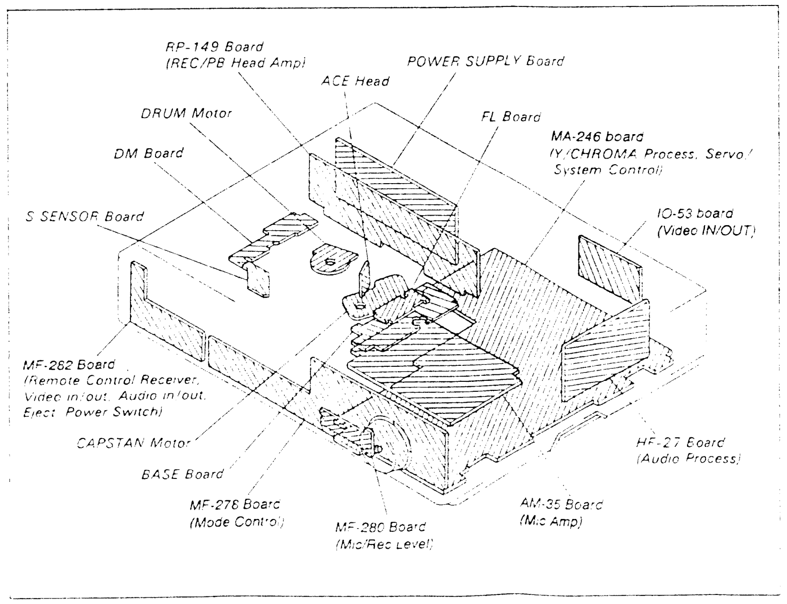

RP-149 Board
(REC/PB Head Amp)
ACE Head
POWER SUPPLY Board
DRUM Motor
DM Board
FL Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out
Eject/ Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

D AMP) PRINTED WIRING BOARD

: 6,000 Series –

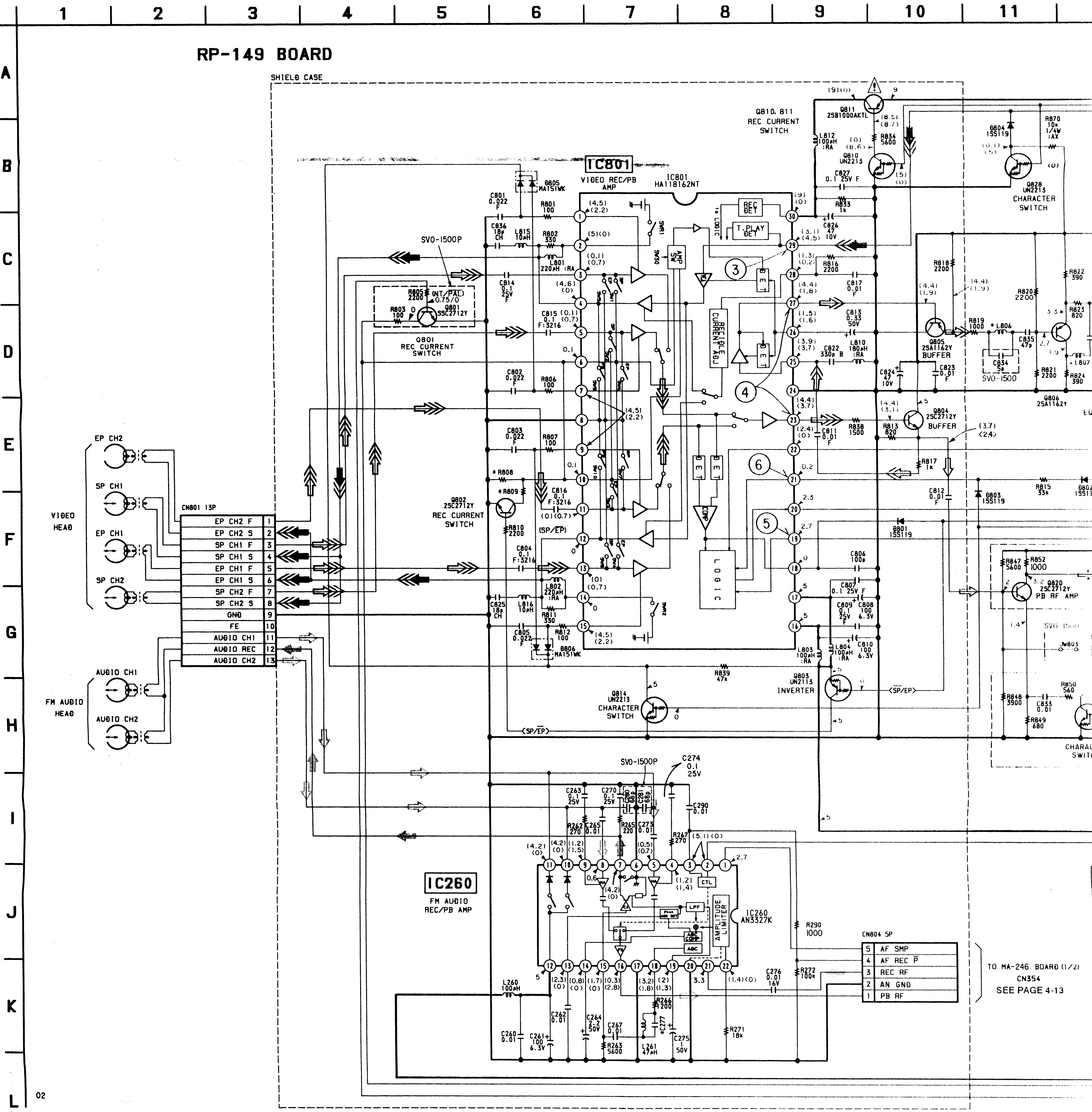
9 BOARD

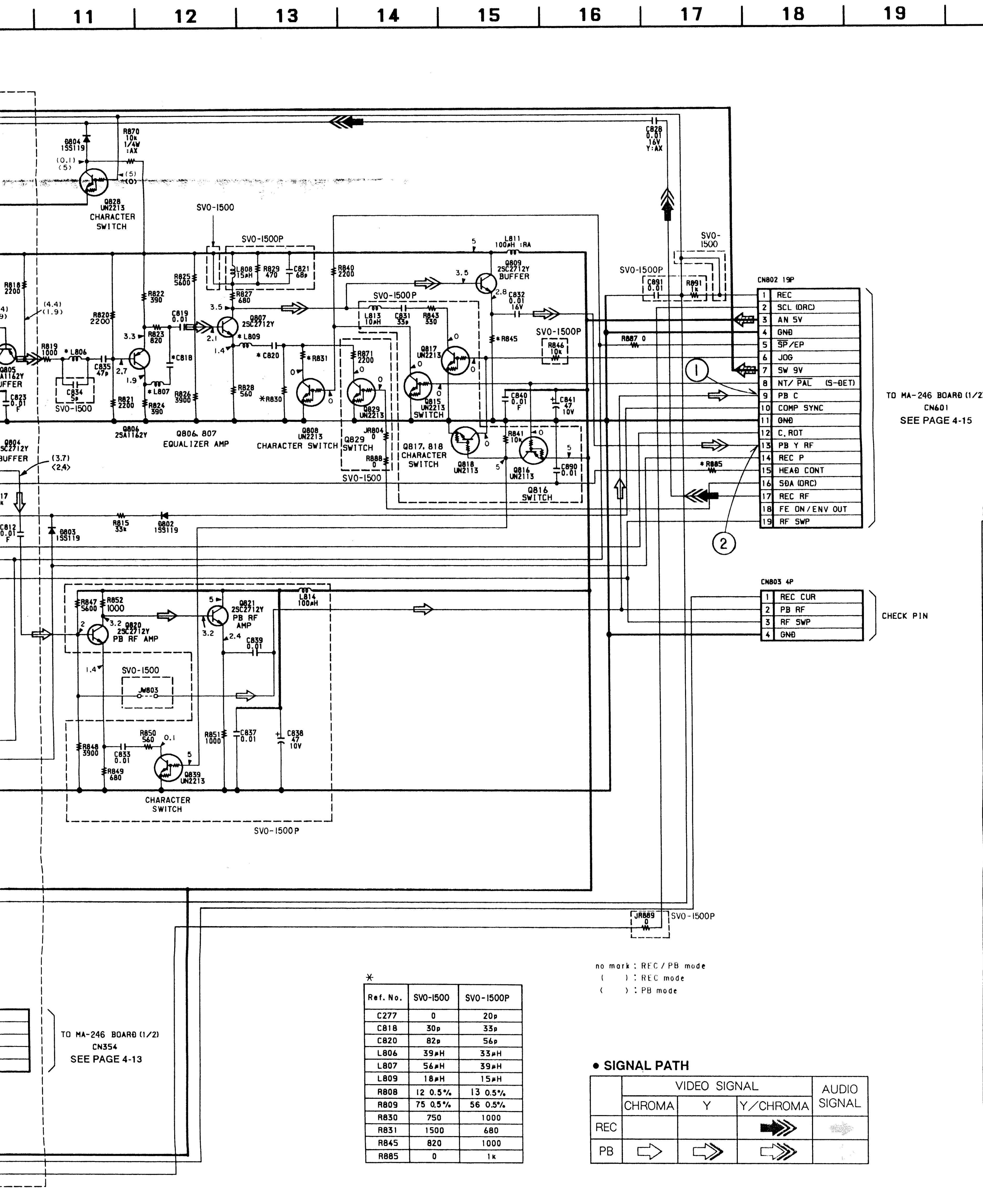

CN803
CN802
CN804
Q829
Q828
Q818
Q815
Q808
Q817
Q805
Q820
R871
R834
R843
R845
R850
R848
R849
R852
R803
R805
L812
L813
L814
L802
L261
L260
C831
C834
C835
C837
C833
C839
C807
C809
C810
C811
C280
C281
JW803
JW839
JW820
JW825
JW812
JW813
JW814
JW815
①
②
③
④
⑤
⑥
1-646-749-
21
2
3
4
5
6
7
8
9


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-262 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject, Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-276 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

RP-149 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

– Ref. No. RP-149 BOARD : 6,000 Series –


RP-149 BOARD
SHIELD CASE
IC801
VIDEO REC/PB AMP
IC801 HA118162NT
Q810, 811 REC CURRENT SWITCH
Q811 2SB1000AKTL
Q810 UN2213
Q804 1SS119
Q828 UN2213 CHARACTER SWITCH
Q805 MA151WK
SVO-1500P
Q801 2SC2712Y
Q801 REC CURRENT SWITCH
(NT/PAL) 0.75/0
REC DET
T.PLAY DET
REC/PB CURRENT ADJ
LOGIC
COMP
Q805 2SA1162Y BUFFER
Q806 2SA1162Y
Q804 2SC2712Y BUFFER
Q802 2SC2712Y REC CURRENT SWITCH
Q803 1SS119
Q801 1SS119
Q820 2SC2712Y PB RF AMP
Q803 UN2113 INVERTER
Q814 UN2213 CHARACTER SWITCH
Q806 MA151WK
(SP/EP)
CN801 13P
EP CH2 F
EP CH2 S
SP CH1 F
SP CH1 S
EP CH1 F
EP CH1 S
SP CH2 F
SP CH2 S
GND
FE
AUDIO CH1
AUDIO REC
AUDIO CH2
EP CH2
SP CH1
VIDEO HEAD
EP CH1
SP CH2
AUDIO CH1
FM AUDIO HEAD
AUDIO CH2
IC260
FM AUDIO REC/PB AMP
IC260 AN3327K
AMPLITUDE LIMITER
LPF
CTL
AGC
SVO-1500P
CN804 5P
5 AF SMP
4 AF REC P
3 REC RF
2 AN GND
1 PB RF
TO MA-246 BOARD (1/2) CN354 SEE PAGE 4-13
CHARAC SWITC
02


11
12
13
14
15
16
17
18
19
20
D804 1SS119
R870 10k 1/4W :AX
Q828 UN2213 CHARACTER SWITCH
C828 0.01 16V Y:AX
SVO-1500
SVO-1500P
L808 15μH
R829 470
C821 68p
R840 2200
L811 100μH :RA
Q809 2SC2712Y BUFFER
C832 0.01 16V
R818 2200
R822 390
R825 5600
R827 680
C819 0.01
Q807 2SC2712Y
L809
C820
R823 820
R820 2200
R819 1000
L806
C835 47p
C834 5p
C818
L807
R821 2200
R824 390
R826 3900
R828 560
R830
R831
R871 2200
Q805 2SA1162Y BUFFER
C823 0.01
Q806 2SA1162Y
Q806, 807 EQUALIZER AMP
Q808 UN2213 CHARACTER SWITCH
Q829 UN2213
Q829 SWITCH
JR804 0
R888 0
L813 10μH
C831 33p
R843 330
Q817 UN2213
Q815 UN2213 SWITCH
Q817, 818 CHARACTER SWITCH
Q818 UN2113
R845
R846 10k
C840 0.01
C841 47 10V
R841 10k
Q816 UN2113
Q816 SWITCH
C890 0.01
R887 0
C891 0.01
R891 1k
R885
Q804 2SC2712Y BUFFER
(3.7) <2.4>
C812 0.01
D803 1SS119
R815 33k
D802 1SS119
CN802 19P
1 REC
2 SCL (ORC)
3 AN 5V
4 GND
5 SP/EP
6 JOG
7 SW 9V
8 NT/PAL (S-DET)
9 PB C
10 COMP SYNC
11 GND
12 C.ROT
13 PB Y RF
14 REC P
15 HEAD CONT
16 SDA (ORC)
17 REC RF
18 FE ON/ENV OUT
19 RF SWP
TO MA-246 BOARD (1/2) CN601 SEE PAGE 4-15
①
②
CN803 4P
1 REC CUR
2 PB RF
3 RF SWP
4 GND
CHECK PIN
R847 5600
R852 1000
Q820 2SC2712Y PB RF AMP
Q821 2SC2712Y PB RF AMP
L814 100μH
C839 0.01
JW803
R848 3900
C833 0.01
R849 680
R850 560
Q839 UN2213
R851 1000
C837 0.01
C838 47 10V
CHARACTER SWITCH
JR889 0
TO MA-246 BOARD (1/2) CN354 SEE PAGE 4-13

no mark : REC / PB mode
( ) : REC mode
( ) : PB mode

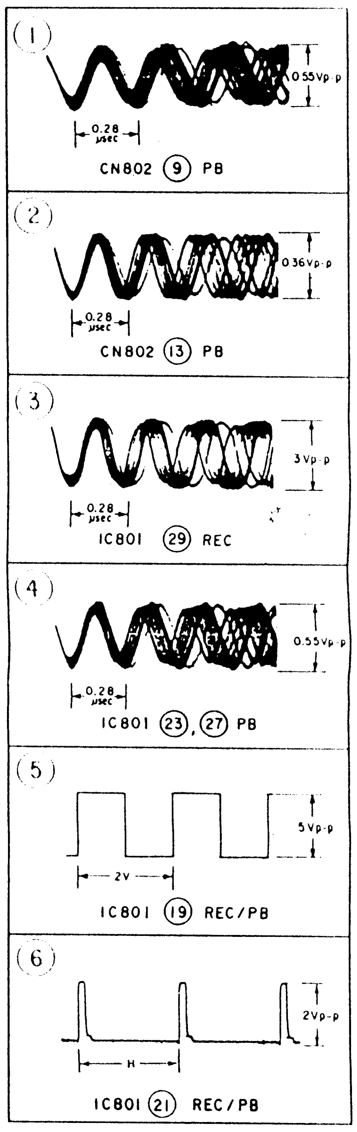
*

Ref. No.	SVO-1500	SVO-1500P
C277	0	20p
C818	30p	33p
C820	82p	56p
L806	39μH	33μH
L807	56μH	39μH
L809	18μH	15μH
R808	12 0.5%	13 0.5%
R809	75 0.5%	56 0.5%
R830	750	1000
R831	1500	680
R845	820	1000
R885	0	1k

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y／CHROMA	
REC			➡»	➡
PB	⇨	⇨»	⇨»	

RP-149 BOARD

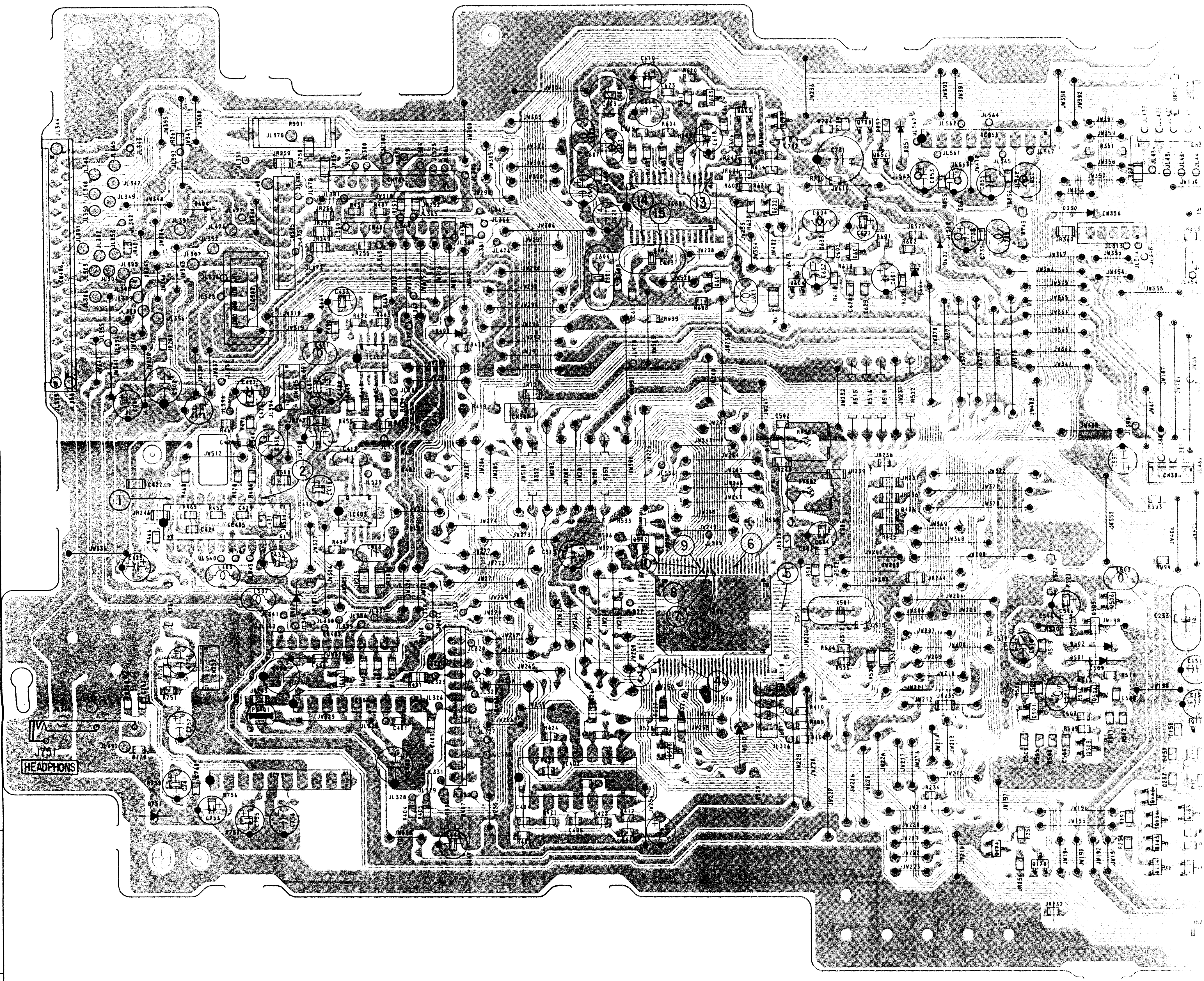


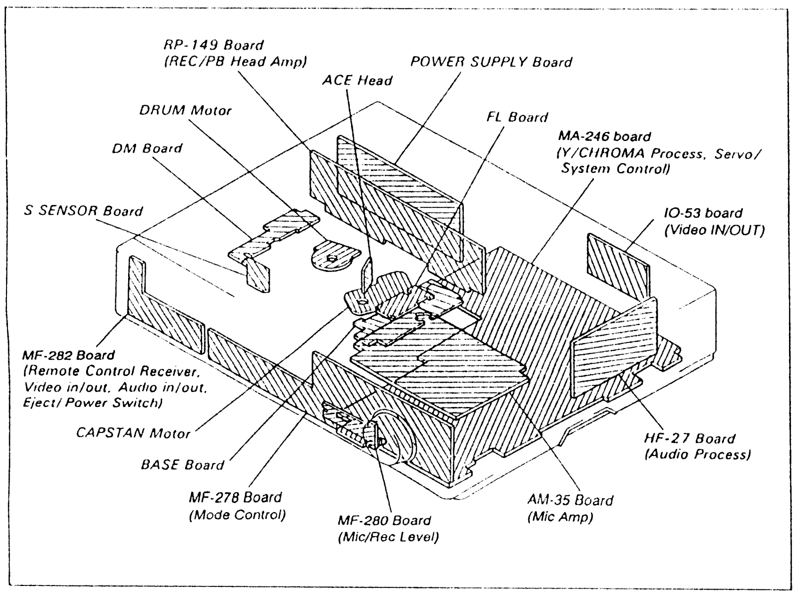
REC／PB HEAD AMP

MA-246 (Y/CHROMA PROCESS SERVO/SYSTEM CONTROL), IO-53 (VIDEO IN/OUT) PRINTED WIRING BOARD

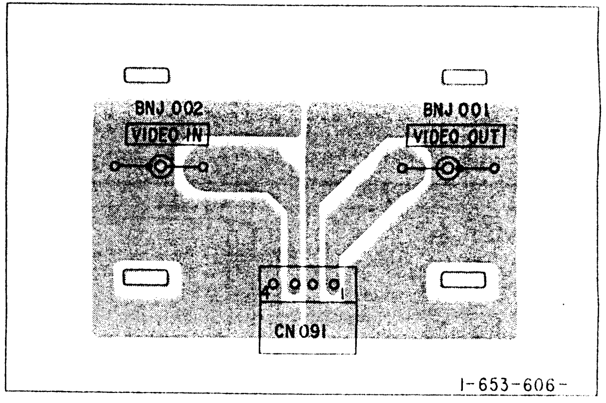
– Ref. No. MA-246 BOARD : 3,000 and IO-53 BOARD : 1,000 Series –

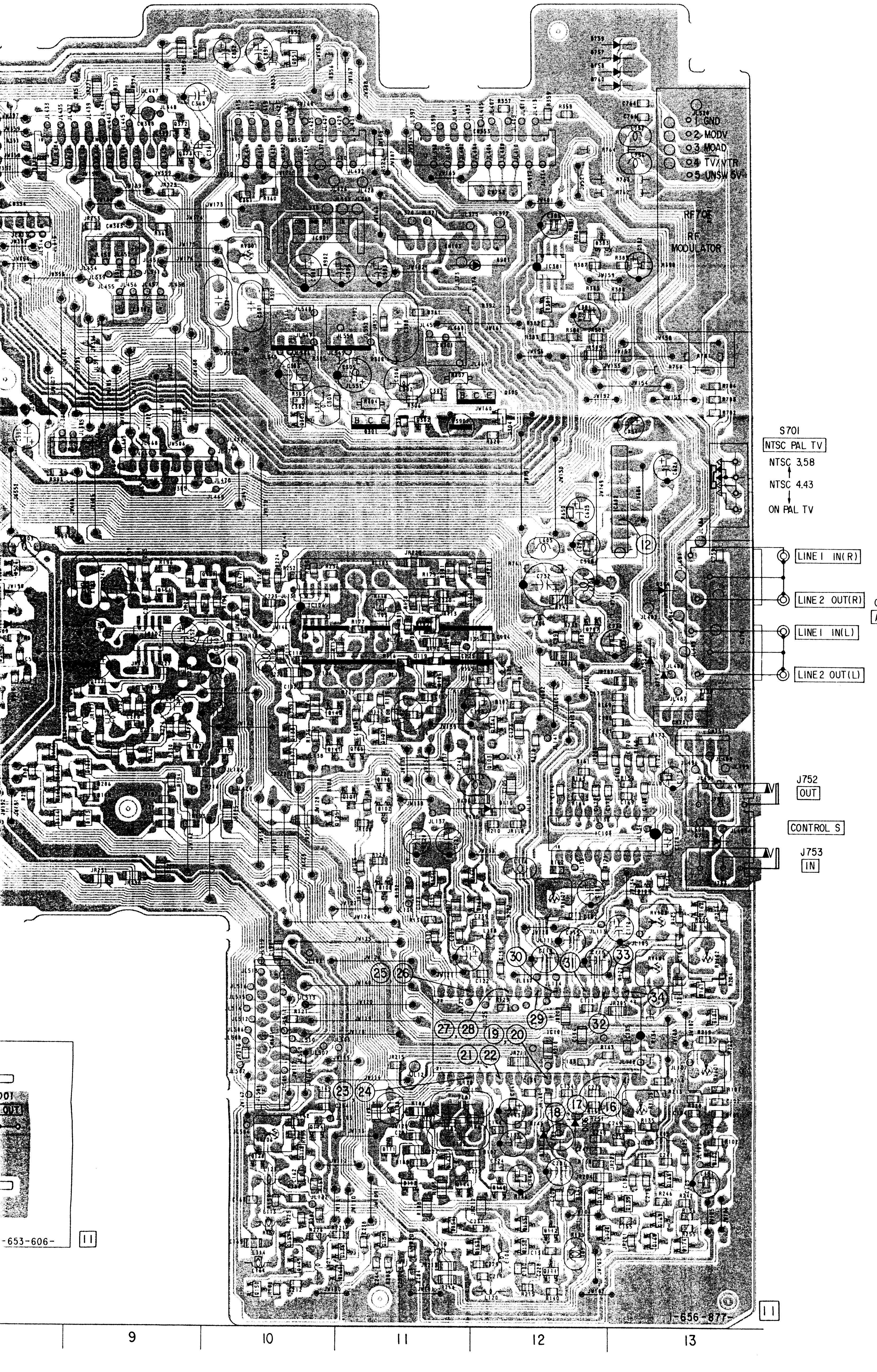
MA-246 BOARD


A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
02
J751
HEADPHONS
IC601
IC501
X501
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑬
⑭
⑮


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/Power Switch)
CAPSTAN Motor
HF-27 Board
(Audio Process)
BASE Board
MF-278 Board
(Mode Control)
AM-35 Board
(Mic Amp)
MF-280 Board
(Mic/Rec Level)

IO-53 BOARD


BNJ 002
VIDEO IN
BNJ 001
VIDEO OUT
CN091
1-653-606-

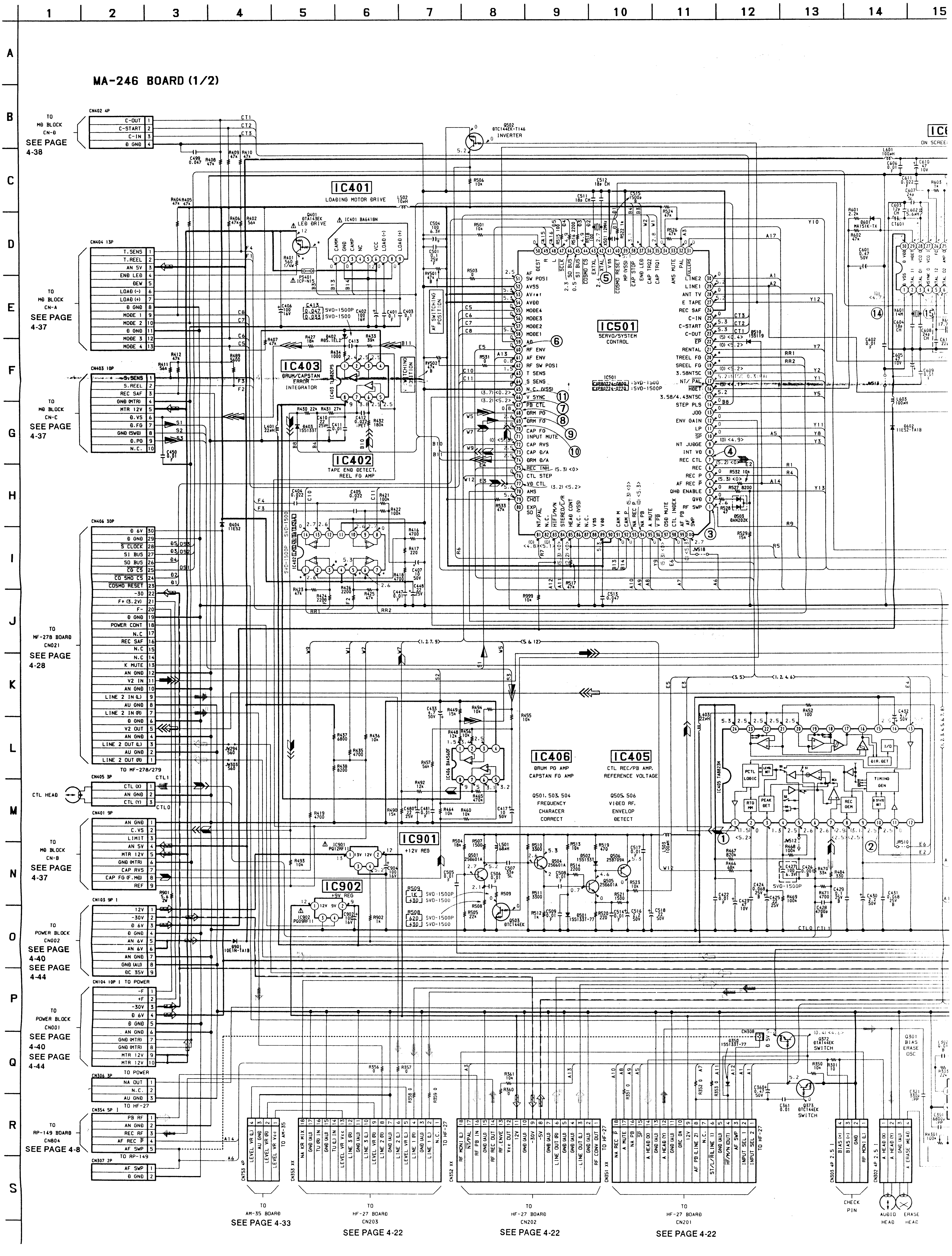

S701
NTSC PAL TV
NTSC 3.58
NTSC 4.43
ON PAL TV
1 GND
2 MODV
3 MOAD
4 TV/VTR
5 UNSW 5V
RF70E
RF MODULATOR
LINE1 IN(R)
LINE2 OUT(R)
CJ701
AUDIO
LINE1 IN(L)
LINE2 OUT(L)
J752
OUT
CONTROL S
J753
IN
⑫
⑯
⑰
⑱
⑲
⑳
㉑
㉒
㉓
㉔
㉕
㉖
㉗
㉘
㉙
㉚
㉛
㉜
㉝
㉞
-653-606-
11
1-656-877-
11
9
10
11
12
13

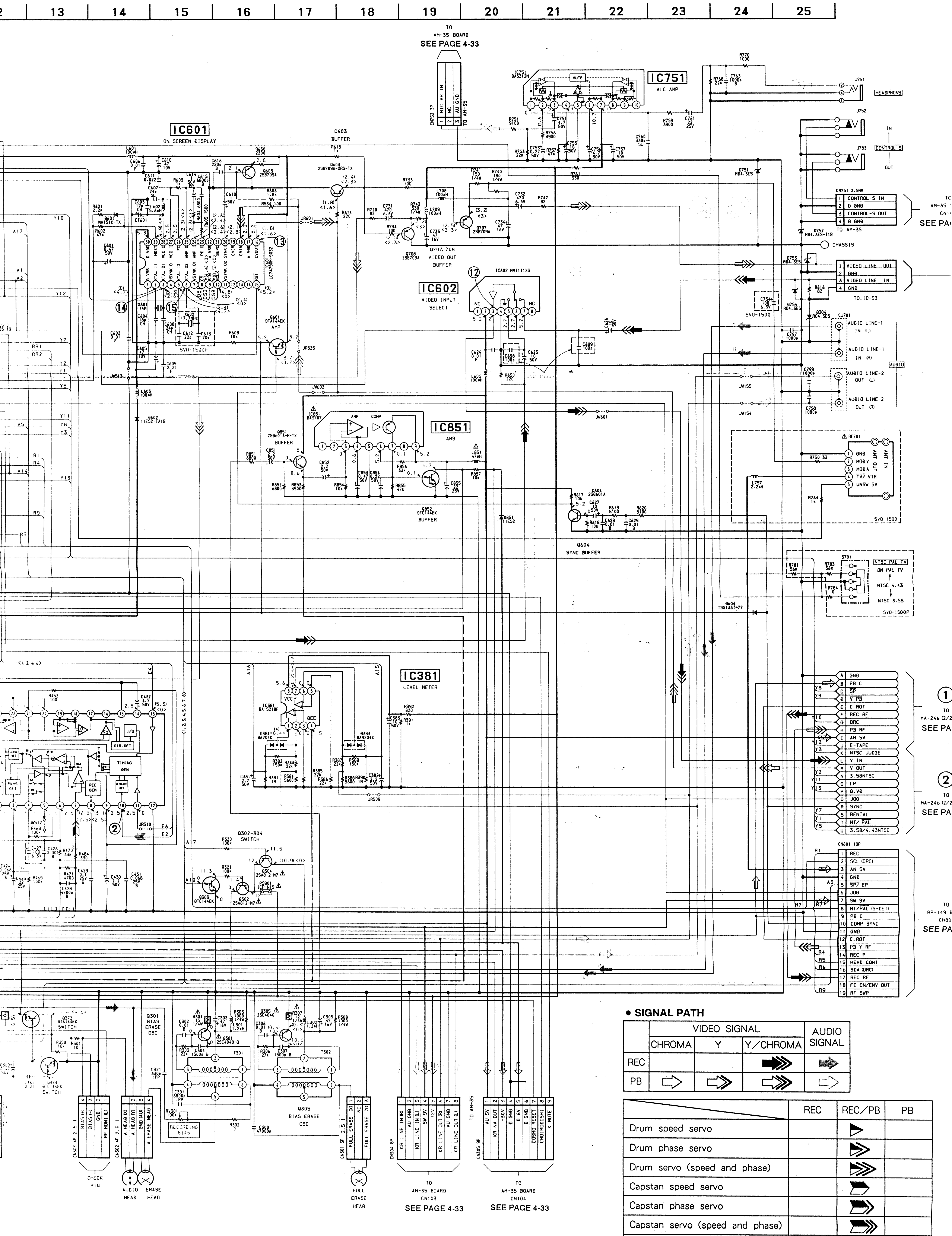
MA-246 BOARD

CN103	B - 11	**Q103**	F - 12
CN104	B - 3	**Q104**	F - 12
CN301	C - 11	**Q105**	E - 11
CN302	C - 9	**Q106**	F - 11
CN303	B - 9	**Q107**	F - 11
CN304	D - 9	**Q110**	F - 11
CN305	B - 2	**Q111**	J - 12
CN354	B - 8	**Q112**	J - 12
CN401	B - 3	**Q113**	J - 12
CN402	F - 6	**Q114**	J - 10
CN403	E - 3	**Q115**	F - 10
CN404	F - 4	**Q116**	F - 9
CN405	C - 3	**Q117**	F - 9
CN406	C - 1	**Q118**	I - 10
CN601	H - 10	**Q120**	I - 10
CN701	F - 13	**Q125**	G - 11
CN751	F - 13	**Q133**	F - 9
CN752	E - 2	**Q134**	F - 8
CN753	B - 12	**Q135**	J - 13
		Q136	J - 11
D101	H - 13	**Q137**	F - 10
D102	G - 11	**Q138**	F - 10
D103	G - 13	**Q139**	F - 10
D106	I - 12	**Q140**	F - 11
D107	I - 12	**Q141**	F - 11
D108	G - 11	**Q142**	E - 12
D110	G - 12	**Q143**	I - 11
D111	I - 11	**Q144**	I - 11
D112	I - 11	**Q145**	G - 8
D113	G - 9	**Q146**	F - 8
D114	G - 9	**Q147**	E - 10
D304	E - 13	**Q148**	I - 12
D350	B - 8	**Q149**	J - 10
D381	C - 12	**Q150**	J - 10
D383	B - 13	**Q151**	J - 10
D402	E - 3	**Q153**	J - 12
D403	C - 4	**Q154**	J - 11
D404	B - 2	**Q156**	E - 9
D501	E - 8	**Q157**	E - 10
D502	E - 8	**Q158**	J - 12
D503	F - 5	**Q159**	J - 11
D510	F - 6	**Q160**	J - 11
D601	B - 6	**Q161**	H - 13
D602	B - 7	**Q162**	G - 13
D604	C - 7	**Q163**	G - 12
D751	F - 2	**Q165**	F - 11
D752	G - 13	**Q166**	I - 13
D753	F - 13	**Q170**	G - 8
D754	F - 13	**Q171**	G - 7
D851	B - 7	**Q174**	J - 13
D901	C - 12	**Q301**	D - 11
		Q302	D - 11
IC101	H - 12	**Q303**	D - 10
IC102	E - 9	**Q304**	D - 12
IC103	G - 13	**Q305**	D - 12
IC104	E - 10	**Q372**	B - 9
IC381	C - 12	**Q373**	B - 9
IC401	F - 3	**Q401**	E - 3
IC402	F - 4	**Q501**	F - 8
IC403	D - 3	**Q502**	D - 5
IC405	D - 2	**Q503**	F - 8
IC406	C - 3	**Q504**	F - 8
IC501	E - 5	**Q505**	E - 8
IC601	B - 5	**Q506**	E - 8
IC602	D - 13	**Q601**	C - 5
IC751	F - 2	**Q603**	A - 6
IC851	B - 7	**Q604**	C - 6
IC901	B - 10	**Q605**	A - 6
IC902	C - 2	**Q707**	E - 12
		Q708	B - 7
Q101	G - 11	**Q851**	A - 10
Q102	I - 13	**Q852**	B - 7

MA-246 (1/2) (SERVO/SYSTEM CONTROL), IO-53 (VIDEO IN/OUT) SCHEMATIC DIAGRAM

– Ref. No. MA-246 BOARD : 3,000 and IO-53 BOARD : 1,000 Series –

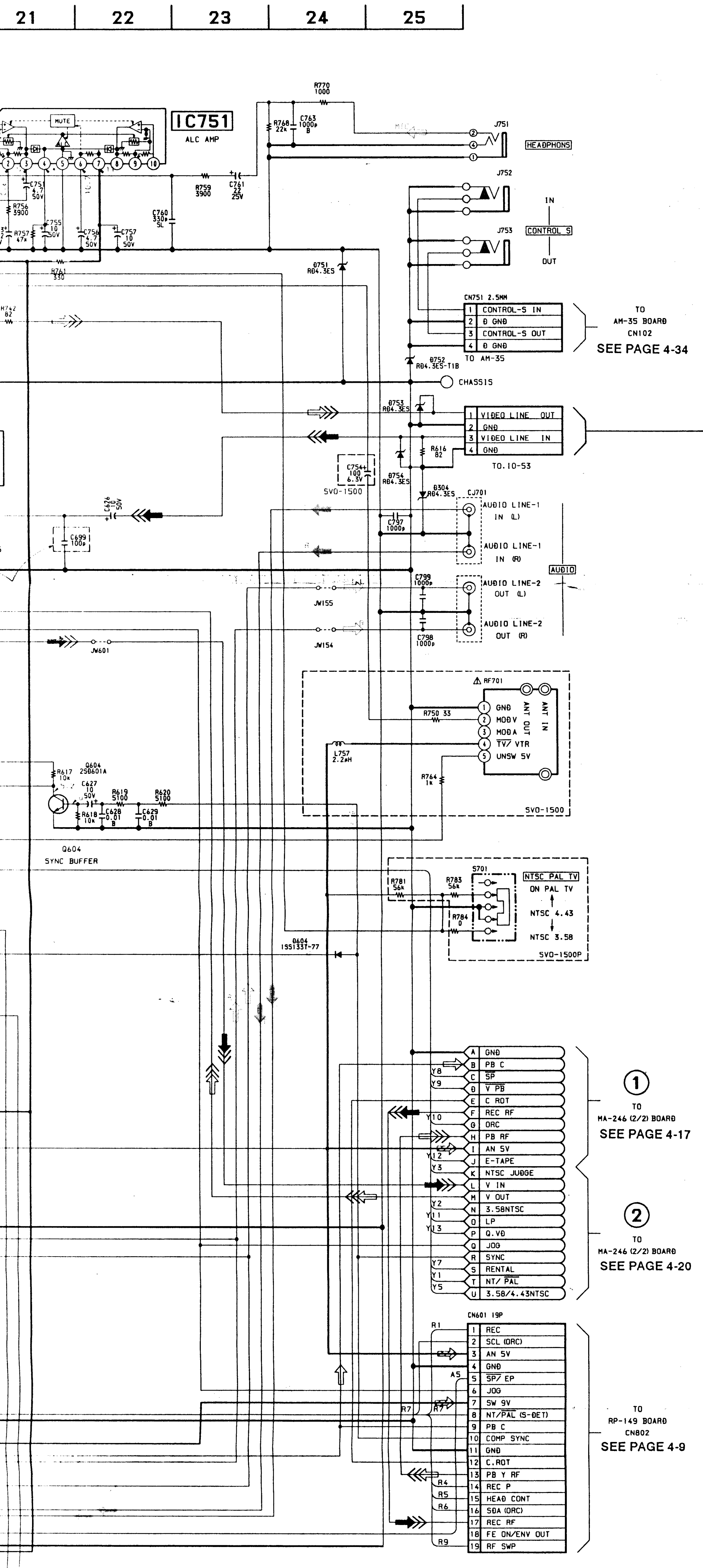

MA-246 BOARD (1/2)
IC401 LOADING MOTOR DRIVE
IC403 DRUM/CAPSTAN ERROR INTEGRATOR
IC402 TAPE END DETECT, REEL FG AMP
IC501 SERVO/SYSTEM CONTROL
IC406 DRUM PG AMP CAPSTAN FG AMP
IC405 CTL REC/PB AMP, REFERENCE VOLTAGE
Q501, 503, 504 FREQUENCY CHARACTER CORRECT
Q505, 506 VIDEO RF, ENVELOP DETECT
IC901 +12V REG
IC902 +9V REG
Q502 DTC144EK-T146 INVERTER
Q401 DTA143EK LED DRIVE
Q372 DTA144EK SWITCH
Q373 DTC144EK SWITCH
Q301 BIAS ERASE OSC
TO MD BLOCK CN-B SEE PAGE 4-38
TO MD BLOCK CN-A SEE PAGE 4-37
TO MD BLOCK CN-C SEE PAGE 4-37
TO HF-278 BOARD CN021 SEE PAGE 4-28
TO MF-278/279
CTL HEAD
TO MD BLOCK CN-B SEE PAGE 4-37
TO POWER BLOCK CN002 SEE PAGE 4-40 SEE PAGE 4-44
TO POWER BLOCK CN001 SEE PAGE 4-40 SEE PAGE 4-44
TO RP-149 BOARD CN804 SEE PAGE 4-8
TO AM-35 BOARD SEE PAGE 4-33
TO HF-27 BOARD CN203 SEE PAGE 4-22
TO HF-27 BOARD CN202 SEE PAGE 4-22
TO HF-27 BOARD CN201 SEE PAGE 4-22
CHECK PIN
AUDIO HEAD
ERASE HEAD
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K L M N O P Q R S

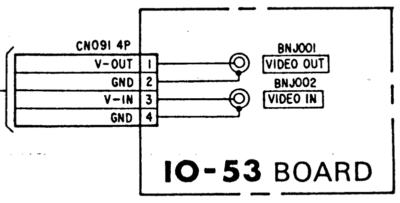

12
13
14
15
16
17
18
19
20
21
22
23
24
25
TO AM-35 BOARD
SEE PAGE 4-33
CN752 3P
MIC VR IN
NC
AU GND
TO AM-35
IC751
BA3312N
ALC AMP
MUTE
J751
HEADPHONS
J752
J753
CONTROL S
IN
OUT
IC601
ON SCREEN DISPLAY
LC74790M-9032
Q603
BUFFER
2SB709A-QRS-TX
Q605
2SB709A
Q601
DTA144EK
AMP
Q707, 708
VIDEO OUT
BUFFER
Q708
2SB709A
Q707
2SB709A
CN751 2.5MM
CONTROL-S IN
0 GND
CONTROL-S OUT
0 GND
TO AM-35
SEE PA
CHASSIS
IC602
IC602 MM1111XS
VIDEO INPUT
SELECT
VIDEO LINE OUT
GND
VIDEO LINE IN
GND
TO.10-53
AUDIO LINE-1 IN (L)
AUDIO LINE-1 IN (R)
AUDIO LINE-2 OUT (L)
AUDIO LINE-2 OUT (R)
AUDIO
IC851
BA3707
AMS
AMP
COMP
Q851
2SB601A-R-TX
BUFFER
Q852
DTC144EK
BUFFER
RF701
GND
MODV
MODA
TV/VTR
UNSW 5V
ANT OUT
ANT IN
Q604
2SB601A
SYNC BUFFER
S701
NTSC PAL TV
ON PAL TV
NTSC 4.43
NTSC 3.58
SVO-1500P
IC381
BA15218F
LEVEL METER
D381
DAN204K
D383
DAN204K
Q302-304
SWITCH
Q304
2SA812-M7
Q302
2SA812-M7
Q303
DTC144EK
GND
PB C
SP
V PB
C ROT
REC RF
ORC
PB RF
AN 5V
E-TAPE
NTSC JUDGE
V IN
V OUT
3.58NTSC
LP
Q.VD
JOG
SYNC
RENTAL
NT/PAL
3.58/4.43NTSC
①
TO MA-246 (2/2)
SEE PA
②
TO MA-246 (2/2)
SEE PA
CN601 19P
REC
SCL (ORC)
AN 5V
GND
SP/EP
JOG
SW 9V
NT/PAL (S-DET)
PB C
COMP SYNC
GND
C.ROT
PB Y RF
REC P
HEAD CONT
SDA (ORC)
REC RF
FE ON/ENV OUT
RF SWP
TO RP-149 B
CN80
SEE PA
TIMING GEN
DIR.DET
Q372
DTA144EK
SWITCH
Q373
DTC144EK
SWITCH
Q301
BIAS
ERASE
OSC
Q301
2SC4040-Q
Q305
2SC4040
Q305
BIAS ERASE
OSC
T301
T302
RECORDING BIAS
CN302 4P 2.5
BIAS (+)
BIAS (-)
RP MON (L)
GND
CHECK PIN
CN303 4P 2.5
A HEAD (X)
A HEAD (Y)
GND (AU)
A ERASE HEAD
AUDIO HEAD
ERASE HEAD
CN301 3P 2.5
FULL ERASE (X)
NC
FULL ERASE (Y)
FULL ERASE HEAD
CN304 8P
KR LINE IN (R)
AU GND
KR LINE IN (L)
SW 9V
12V
KR LINE OUT (R)
AU GND
KR LINE OUT (L)
TO AM-35 BOARD
CN103
SEE PAGE 4-33
CN305 9P
AU 5V
KR NA OUT
-30V
B GND
B 6V
B GND
COSMO RESET
CHOIMONOSHI
K MUTE
TO AM-35 BOARD
CN104
SEE PAGE 4-33

• SIGNAL PATH

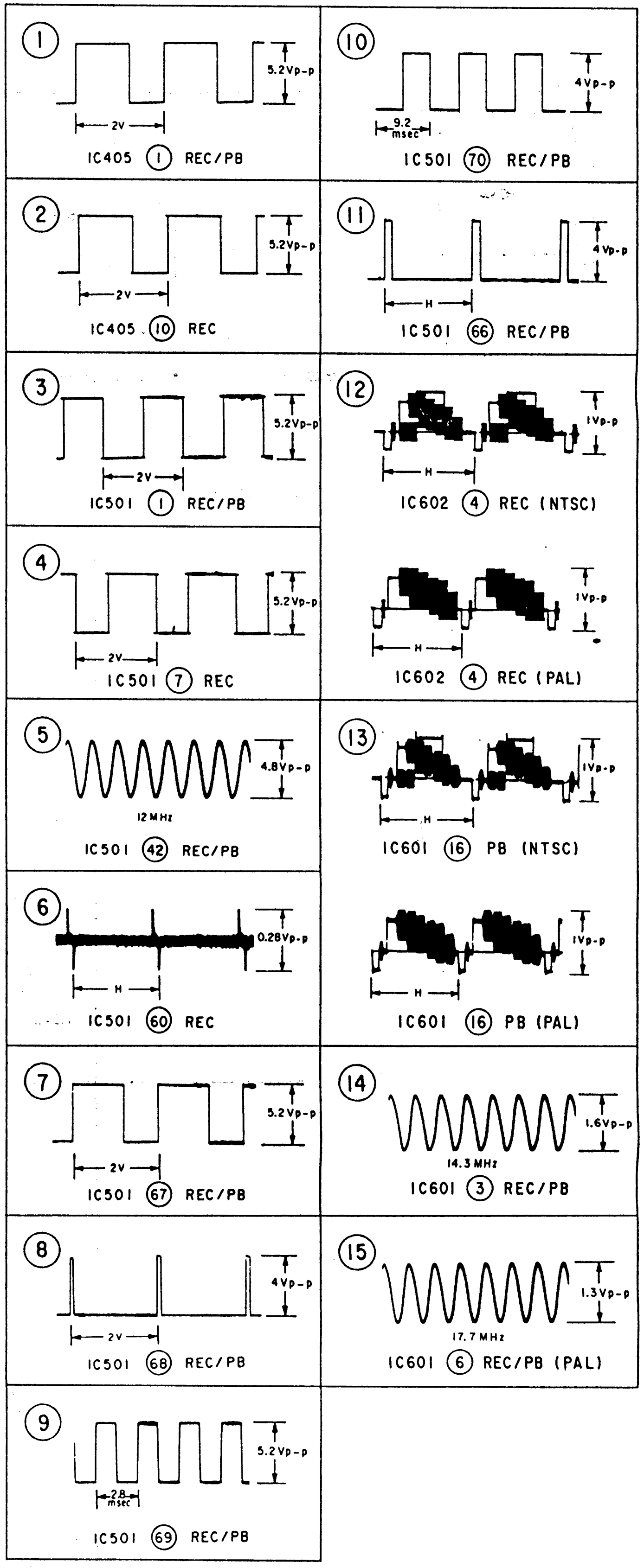
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	➡
PB	⇨	⇨	⇨	⇨

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		⇨	
Drum servo (speed and phase)		⇨	
Capstan speed servo		➡	
Capstan phase servo		➡	
Capstan servo (speed and phase)		➡	
Ref. signal	➡		


21
22
23
24
25
IC751
ALC AMP
MUTE
R770 1000
R768 22k
C763 1000p B
J751
HEADPHONS
J752
J753
IN
CONTROL S
OUT
R759 3900
C761 22 25V
C751 4.7 50V
R756 3900
R757 47k
C755 10 50V
C756 4.7 50V
C757 10 50V
C760 330p SL
R761 330
R742 82
D751 RD4.3ES
CN751 2.5MM
1 CONTROL-S IN
2 D GND
3 CONTROL-S OUT
4 D GND
TO AM-35
TO AM-35 BOARD CN102
SEE PAGE 4-34
D752 RD4.3ES-T1B
CHASSIS
D753 RD4.3ES
1 VIDEO LINE OUT
2 GND
3 VIDEO LINE IN
4 GND
TO.IO-53
R616 82
C754 100 6.3V
SVO-1500
D754 RD4.3ES
D304 RD4.3ES
C626 10 50V
C699 100p
CJ701
AUDIO LINE-1 IN (L)
AUDIO LINE-1 IN (R)
AUDIO
C797 1000p
C799 1000p
AUDIO LINE-2 OUT (L)
AUDIO LINE-2 OUT (R)
C798 1000p
JW155
JW154
JW601
RF701
R750 33
1 GND
2 MOD V
3 MOD A
4 TV/ VTR
5 UNSW 5V
ANT OUT
ANT IN
L757 2.2μH
R764 1k
SVO-1500
Q604 2SD601A
R617 10k
C627 10 50V
R619 5100
R620 5100
R618 10k
C628 0.01 B
C629 0.01 B
Q604
SYNC BUFFER
S701
R781 56k
R783 56k
R784 0
NTSC PAL TV
ON PAL TV
NTSC 4.43
NTSC 3.58
SVO-1500P
D604 1SS133T-77
A GND
B PB C
C SP
D V PB
E C ROT
F REC RF
G DRC
H PB RF
I AN 5V
J E-TAPE
K NTSC JUDGE
L V IN
M V OUT
N 3.58NTSC
O LP
P Q.VD
Q JOG
R SYNC
S RENTAL
T NT/ PAL
U 3.58/4.43NTSC
Y8
Y9
Y10
Y12
Y3
Y2
Y11
Y13
Y7
Y1
Y5
①
TO MA-246 (2/2) BOARD
SEE PAGE 4-17
②
TO MA-246 (2/2) BOARD
SEE PAGE 4-20
CN601 19P
1 REC
2 SCL (DRC)
3 AN 5V
4 GND
5 SP/ EP
6 JOG
7 SW 9V
8 NT/PAL (S-DET)
9 PB C
10 COMP SYNC
11 GND
12 C.ROT
13 PB Y RF
14 REC P
15 HEAD CONT
16 SDA (DRC)
17 REC RF
18 FE ON/ENV OUT
19 RF SWP
R1
A5
R7
R4
R5
R6
R9
TO RP-149 BOARD CN802
SEE PAGE 4-9
-33


CN091 4P
V-OUT 1
GND 2
V-IN 3
GND 4
BNJ001
VIDEO OUT
BNJ002
VIDEO IN
IO-53 BOARD

MA-246 BOARD (1/2)



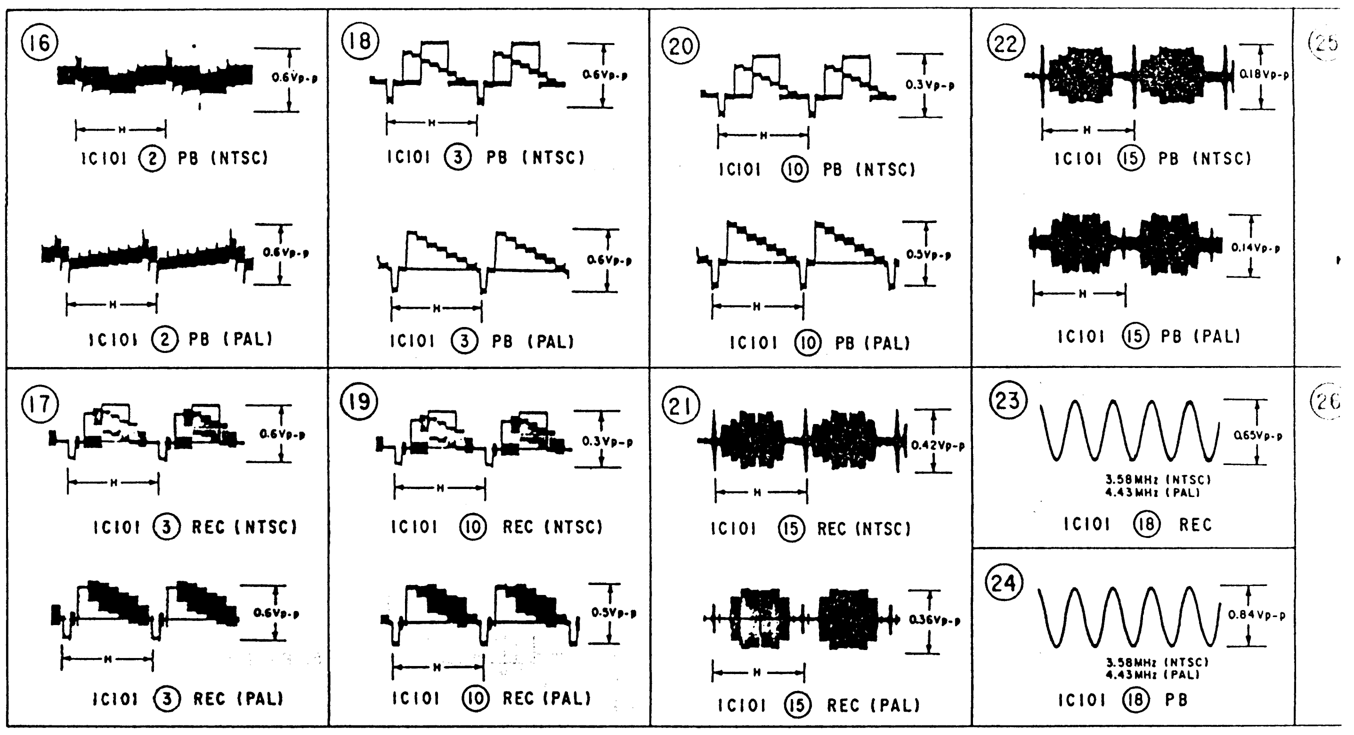
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y／CHROMA	
REC			➡»	⇨
PB	⇨	⇨»	⇨»»	⇨

	REC	REC／PB	PB
Drum speed servo		▷	
Drum phase servo		▷»	
Drum servo (speed and phase)		▷»»	
Capstan speed servo		▶	
Capstan phase servo		▶»	
Capstan servo (speed and phase)		▶»»	
Ref. signal	⇨		

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

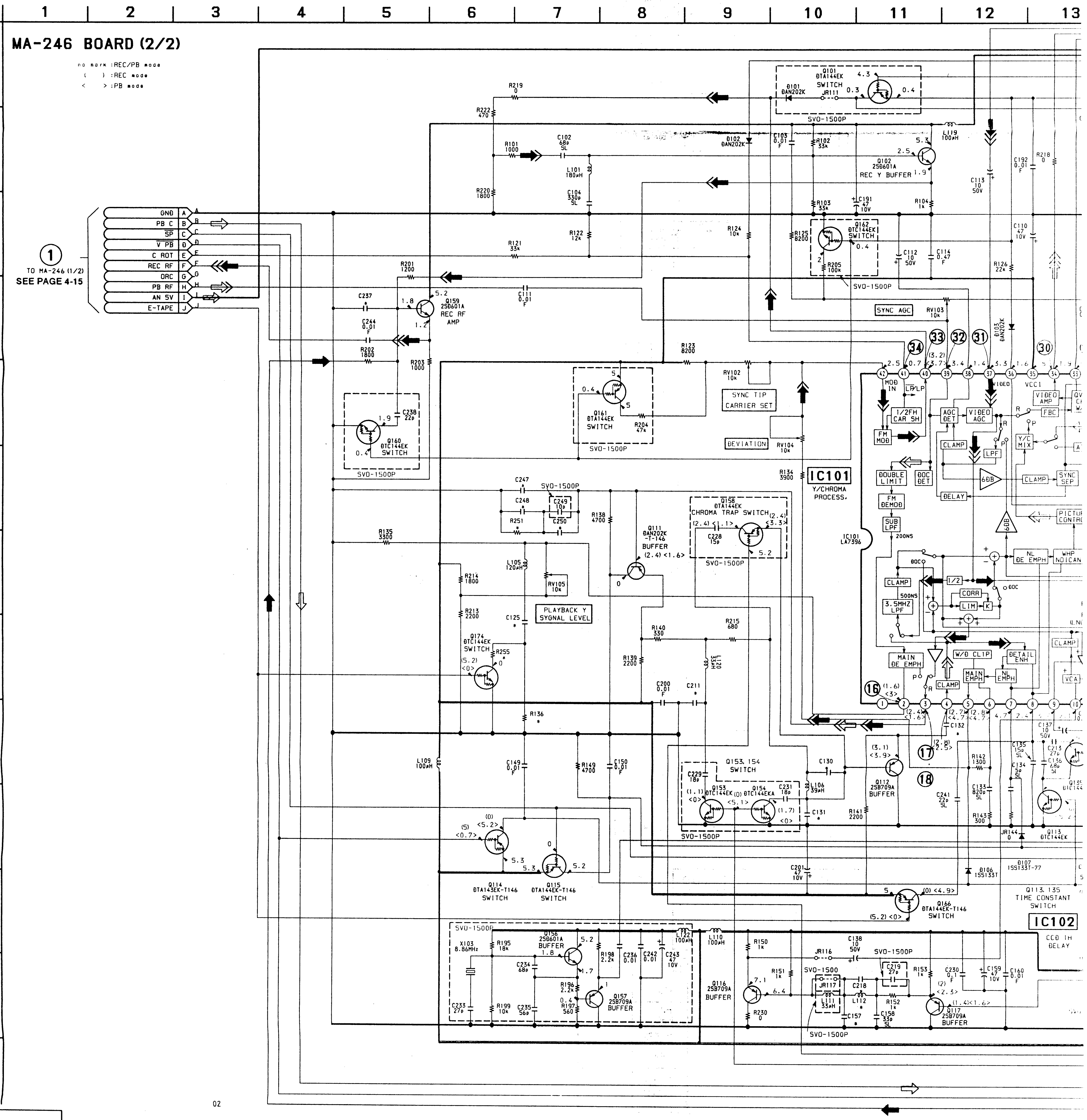
MA-246 BOARD (2/2)



A-246 (2/2) (Y/CHROMA PROCESS) SCHEMATIC DIAGRAM

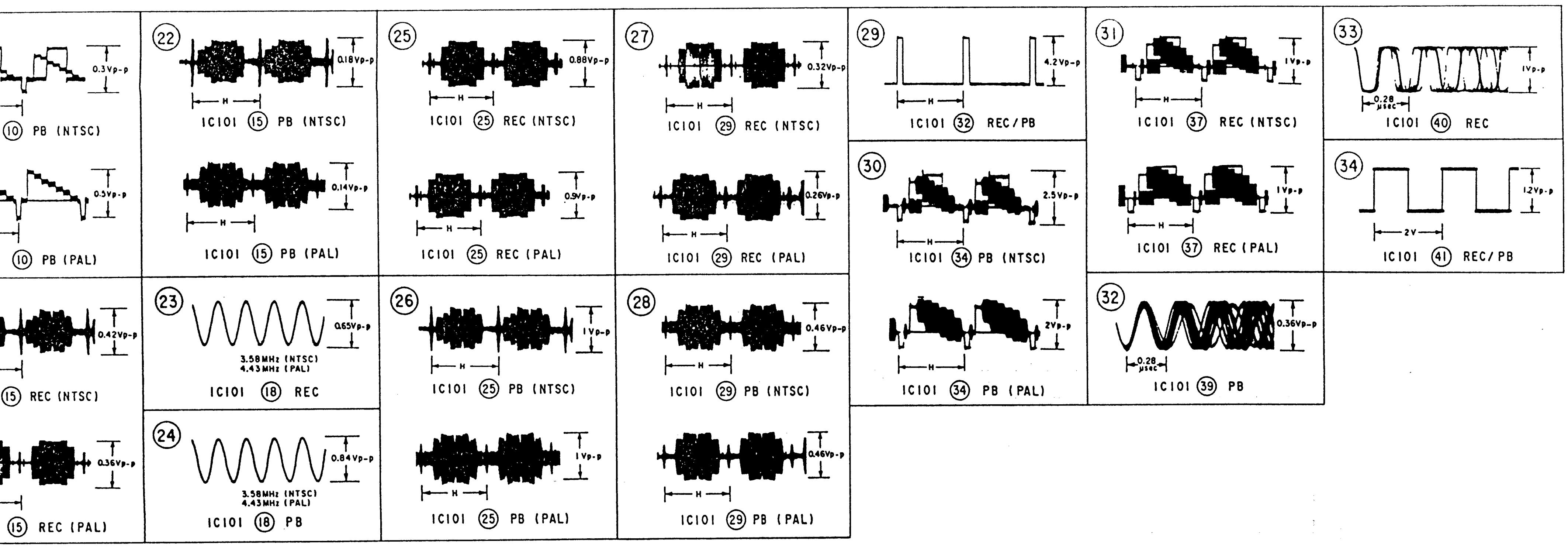
Ref. No. MA-246 BOARD : 3,000 Series –

See page 4-10 for printed wiring board.

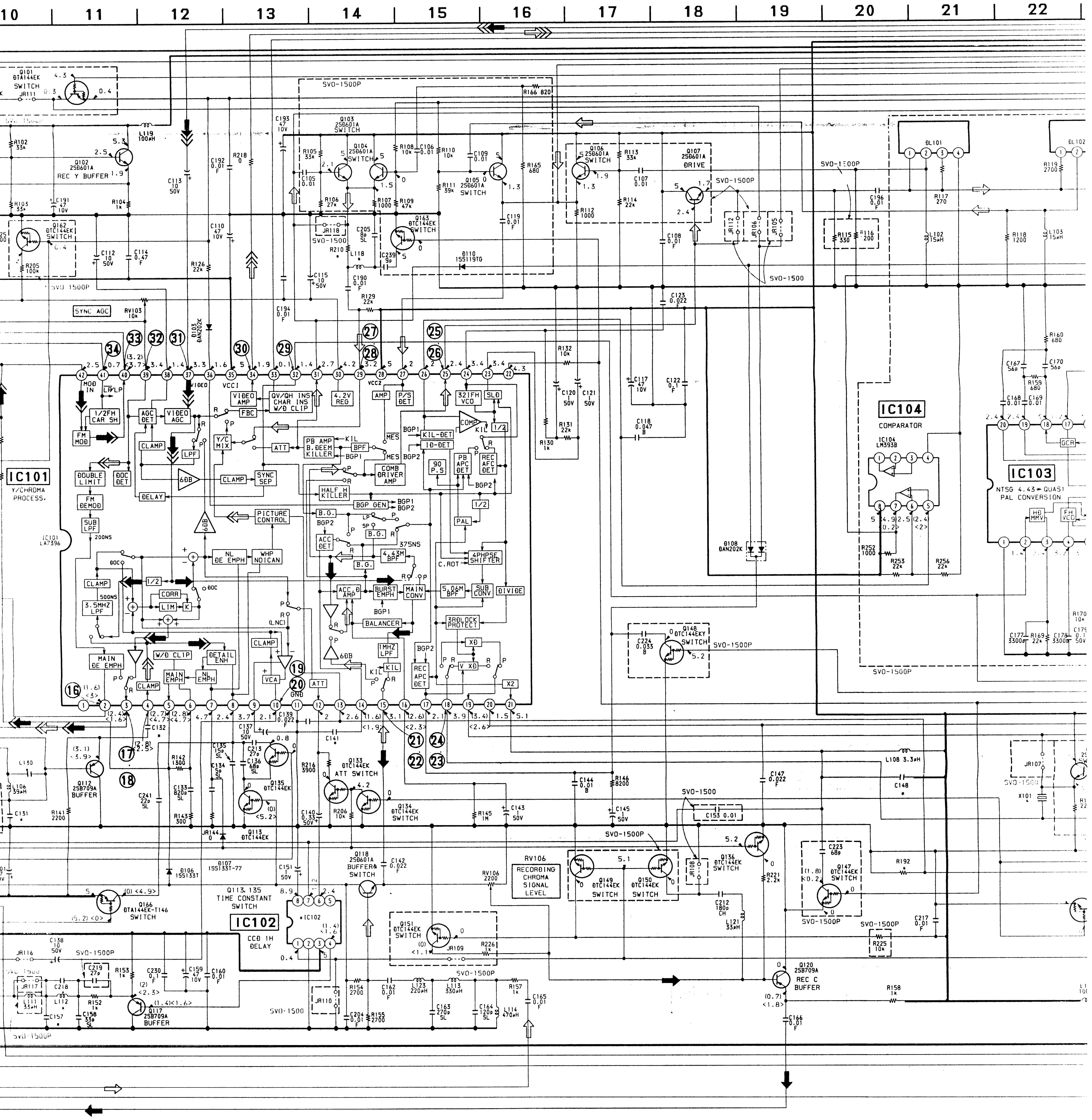


1 2 3 4 5 6 7 8 9 10 11 12 13
MA-246 BOARD (2/2)
no mark :REC/PB mode
( ) :REC mode
< > :PB mode
① TO MA-246 (1/2) SEE PAGE 4-15
GND A
PB C B
SP C
V PB D
C ROT E
REC RF F
DRC G
PB RF H
AN 5V I
E-TAPE J
Q101 DTA144EK SWITCH
D101 DAN202K
Q102 2SD601A REC Y BUFFER
Q162 DTC144EK SWITCH
Q159 2SD601A REC RF AMP
Q160 DTC144EK SWITCH
Q161 DTA144EK SWITCH
SYNC AGC
SYNC TIP CARRIER SET
DEVIATION
IC101 Y/CHROMA PROCESS. IC101 LA7396
Q158 DTA144EK CHROMA TRAP SWITCH
Q111 DAN202K-T-146 BUFFER
PLAYBACK Y SYGNAL LEVEL
Q174 DTC144EK SWITCH
Q153, 154 SWITCH
Q112 2SB709A BUFFER
Q114 DTA143EK-T146 SWITCH
Q115 DTA144EK-T146 SWITCH
Q166 DTA144EK-T146 SWITCH
Q113, 135 TIME CONSTANT SWITCH
IC102 CCD 1H DELAY
Q156 2SD601A BUFFER
Q157 2SB709A BUFFER
Q116 2SB709A BUFFER
Q117 2SB709A BUFFER
X103 8.86MHz
SVO-1500P
FM MOD
1/2FH CAR SH
AGC DET
VIDEO AGC
VIDEO AMP
Y/C MIX
CLAMP
LPF
DOUBLE LIMIT
DOC DET
6DB
SYNC SEP
DELAY
FM DEMOD
SUB LPF
PICTURE CONTROL
NL DE EMPH
WHP NOICAN
3.5MHZ LPF
CORR
LIM
K
MAIN DE EMPH
W/D CLIP
DETAIL ENH
MAIN EMPH
NL EMPH
VCA

02



0.3Vp-p
⑩ PB (NTSC)
0.5Vp-p
⑩ PB (PAL)
0.42Vp-p
⑮ REC (NTSC)
0.36Vp-p
⑮ REC (PAL)
㉒
0.18Vp-p
IC101 ⑮ PB (NTSC)
0.14Vp-p
IC101 ⑮ PB (PAL)
㉓
0.65Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)
IC101 ⑱ REC
㉔
0.84Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)
IC101 ⑱ PB
㉕
0.80Vp-p
IC101 ㉕ REC (NTSC)
0.9Vp-p
IC101 ㉕ REC (PAL)
㉖
1Vp-p
IC101 ㉕ PB (NTSC)
1Vp-p
IC101 ㉕ PB (PAL)
㉗
0.32Vp-p
IC101 ㉙ REC (NTSC)
0.26Vp-p
IC101 ㉙ REC (PAL)
㉘
0.46Vp-p
IC101 ㉙ PB (NTSC)
0.46Vp-p
IC101 ㉙ PB (PAL)
㉙
4.2Vp-p
IC101 ㉜ REC/PB
㉚
2.5Vp-p
IC101 ㉞ PB (NTSC)
2Vp-p
IC101 ㉞ PB (PAL)
㉛
1Vp-p
IC101 ㊲ REC (NTSC)
1Vp-p
IC101 ㊲ REC (PAL)
㉜
0.36Vp-p
0.28 μsec
IC101 ㊴ PB
㉝
1Vp-p
0.28 μsec
IC101 ㊵ REC
㉞
1.2Vp-p
2V
IC101 ㊶ REC/PB
H



10
11
12
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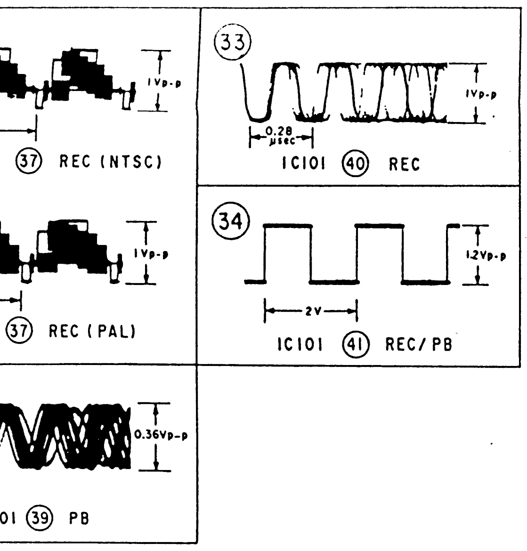
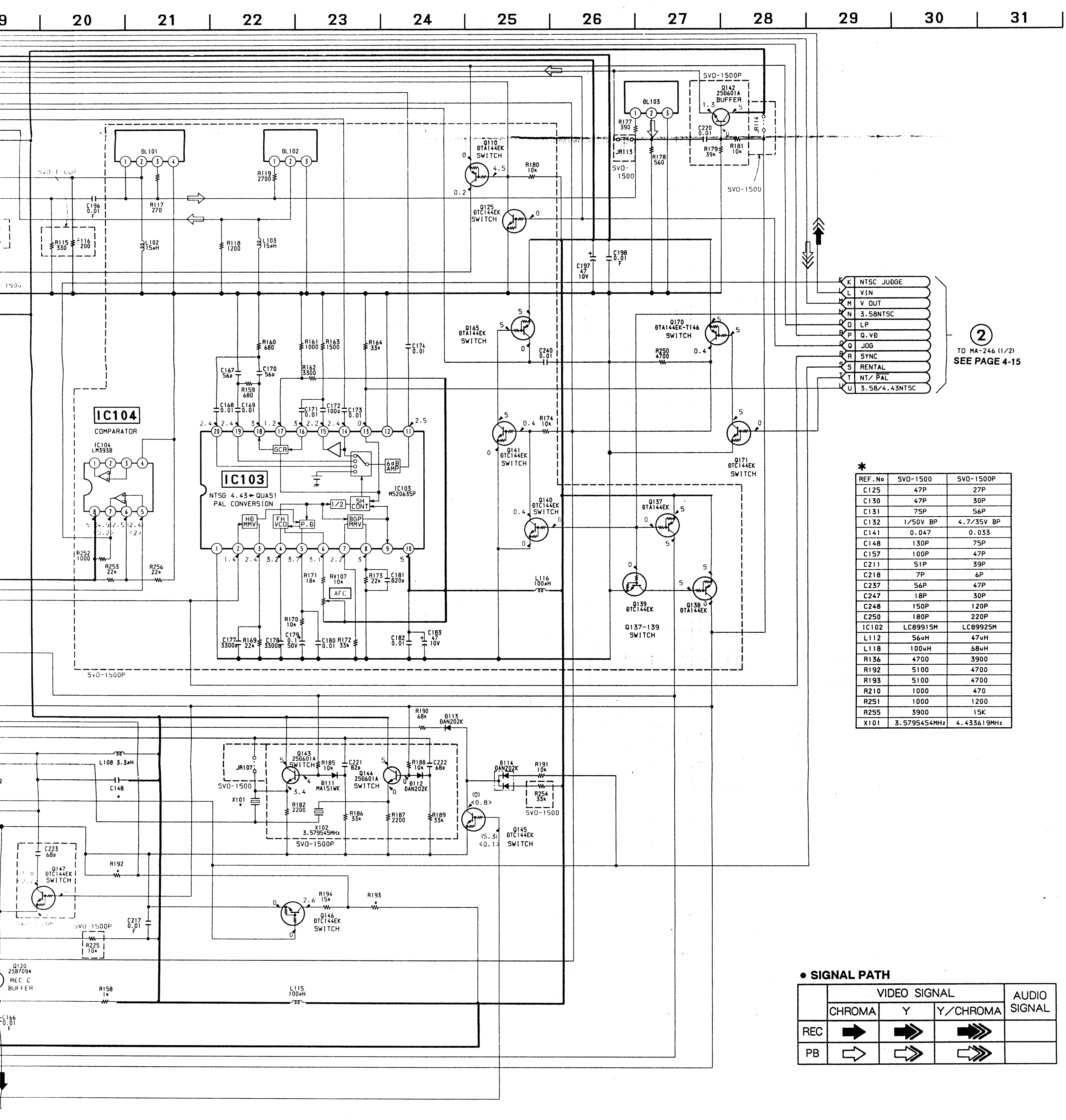
16
17
18
19
20
21
22
IC101
Y/CHROMA PROCESS.
IC101 LA7396
IC102
CCD 1H DELAY
IC103
NTSC 4.43→QUASI PAL CONVERSION
IC104
COMPARATOR
IC104 LM393B
Q101 DTA144EK SWITCH
Q102 2SD601A REC Y BUFFER
Q103 2SD601A SWITCH
Q104 2SD601A SWITCH
Q105 2SD601A SWITCH
Q106 2SD601A SWITCH
Q107 2SD601A DRIVE
Q112 2SB709A BUFFER
Q113, 135 TIME CONSTANT SWITCH
Q117 2SB709A BUFFER
Q118 2SD601A BUFFER& SWITCH
Q120 2SB709A REC C BUFFER
Q133 DTC144EK ATT SWITCH
Q134 DTC144EK SWITCH
Q135 DTC144EK
Q136 DTC144EK SWITCH
Q147 DTC144EK SWITCH
Q148 DTC144EKY SWITCH
Q149 DTC144EK SWITCH
Q150 DTC144EK SWITCH
Q151 DTC144EK SWITCH
Q162 DTC144EK SWITCH
Q163 DTC144EK SWITCH
Q166 DTA144EK-T146 SWITCH
D103 BAN202K
D106 1SS133T
D107 1SS133T-77
D108 BAN202K
D110 1SS119TG
RV103 10k
RV106 RECORDING CHROMA SIGNAL LEVEL
SYNC AGC
SVO-1500P
SVO-1500
BL101
X101
FM MOD
1/2FH CAR SH
AGC DET
VIDEO AGC
VIDEO AMP
FBC
QV/QH INS CHAR INS W/D CLIP
4.2V REG
AMP
P/S DET
321FH VCO
SLD
COMP
KIL
1/2
KIL-DET
ID-DET
PB AMP B.DEEM KILLER
BPF
MES
COMB DRIVER AMP
PB APC DET
REC AFC DET
90 P.S
HALF H KILLER
BGP GEN
BGP1
BGP2
CLAMP
LPF
Y/C MIX
ATT
6DB
SYNC SEP
DOUBLE LIMIT
DOC DET
FM DEMOD
SUB LPF
200NS
DELAY
PICTURE CONTROL
B.G.
ACC DET
4.43M BPF
375NS
PAL
4PHPSE SHIFTER
C.ROT
NL DE EMPH
WHP NOICAN
DOC
1/2
CORR
LIM
K
3.5MHZ LPF
500NS
ACC & AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
DIVIDE
BALANCER
3RDLOCK PROTECT
MAIN DE EMPH
W/D CLIP
DETAIL ENH
MAIN EMPH
NL EMPH
VCA
1MHZ LPF
REC APC DET
XD
V XD
X2
MOD IN
LP
VIDEO
VCC1
VCC2
GND
R
P
LNC
GCR
HD MMV
FH VCC





9
20
21
22
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24
25
26
27
28
29
30
31
DL101
DL102
DL103
SVO-1500P
Q142 2SD601A BUFFER
JR114
R177 390
JR113
R178 560
C220 0.01
R179 39k
R181 10k
SVO-1500
Q110 DTA144EK SWITCH
R180 10k
Q125 DTC144EK SWITCH
C196 0.01 F
R117 270
R119 2700
R115 330
R116 200
L102 15µH
R118 1200
L103 15µH
C197 47 10V
C198 0.01 F
K NTSC JUDGE
L VIN
M V OUT
N 3.58NTSC
O LP
P Q.VD
Q JOG
R SYNC
S RENTAL
T NT/PAL
U 3.58/4.43NTSC
2
TO MA-246 (1/2)
SEE PAGE 4-15
Q165 DTA144EK SWITCH
C240 0.01
Q170 DTA144EK-T146 SWITCH
R250 4700
R160 680
R161 1000
R163 1500
R164 33k
C174 0.01
C167 56p
C170 56p
R159 680
R162 3300
C168 0.01
C169 0.01
C171 0.01
C172 100p
C173 0.01
IC104
COMPARATOR
IC104 LM393B
IC103
NTSC 4.43→QUASI PAL CONVERSION
IC103 M52063SP
GCR
6dB AMP
1/2
SH CONT
HD MMV
FH VCO
P.D
BGP MMV
AFC
Q141 DTC144EK SWITCH
R174 10k
Q171 DTC144EK SWITCH
Q140 DTC144EK SWITCH
Q137 DTA144EK
L116 100µH
Q139 DTC144EK
Q138 DTA144EK
Q137-139 SWITCH
R252 1000
R253 22k
R256 22k
R171 18k
RV107 10k
R173 22k
C181 820p
R170 10k
C177 3300p
R169 22k
C178 3300p
C179 0.1 50V
C180 0.01
R172 33k
C182 0.01
C183 47 10V
SVO-1500P
R190 68k
D113 DAN202K
L108 3.3µH
C148
JR107
SVO-1500
X101
Q143 2SD601A SWITCH
R185 10k
C221 82p
D111 MA151WK
Q144 2SD601A SWITCH
R188 10k
C222 68p
D112 DAN202K
R182 2200
X102 3.579545MHz
R186 33k
R187 2200
R189 33k
D114 DAN202K
R191 10k
R254 33k
Q145 DTC144EK SWITCH
C223 68p
Q147 DTC144EK SWITCH
R192
R194 15k
R193
Q146 DTC144EK SWITCH
C217 0.01 F
R225 10k
Q120 2SB709A REC C BUFFER
R158 1k
L115 100µH
C166 0.01 F

*

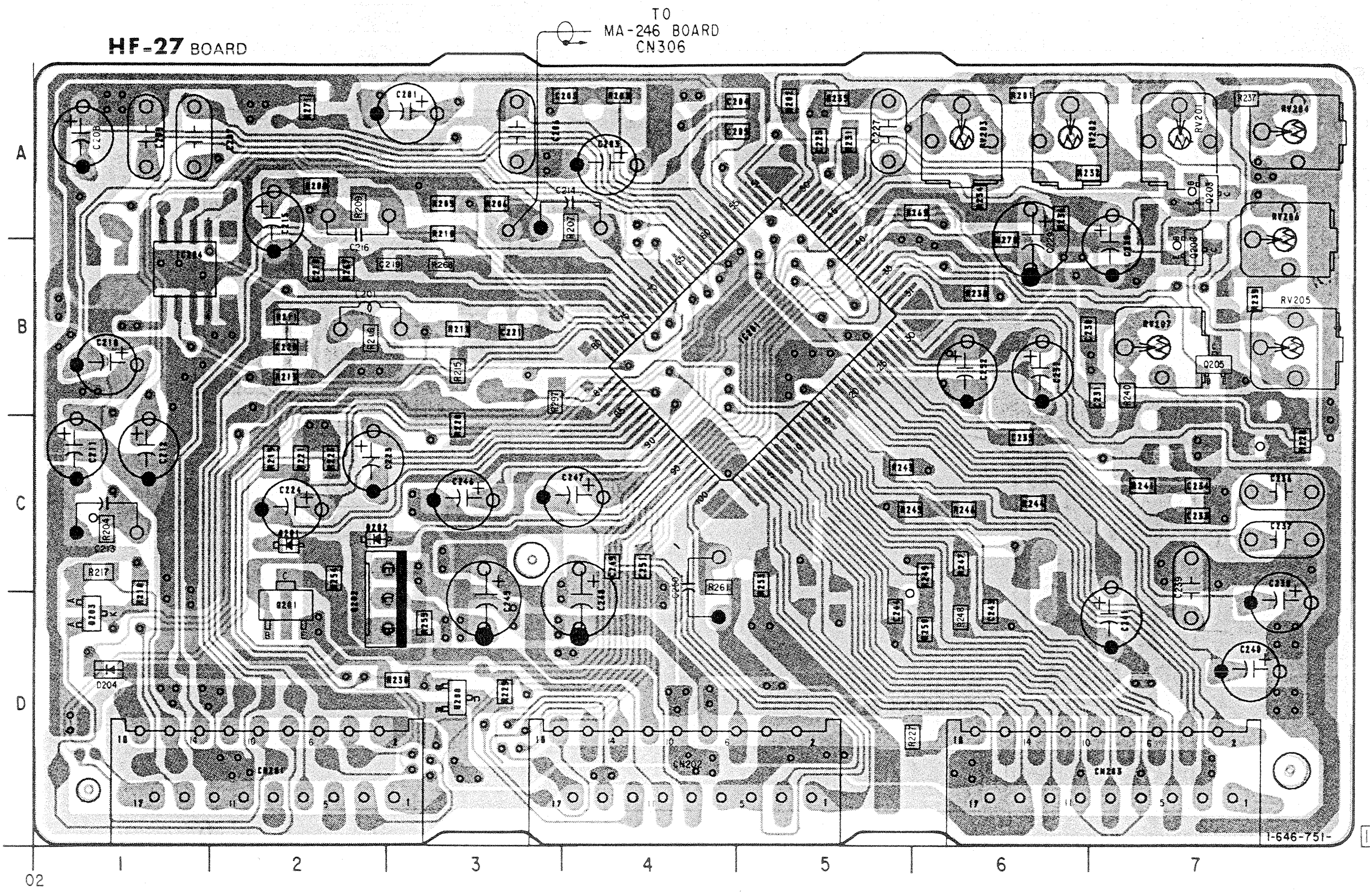
REF.No	SVO-1500	SVO-1500P
C125	47P	27P
C130	47P	30P
C131	75P	56P
C132	1/50V BP	4.7/35V BP
C141	0.047	0.033
C148	130P	75P
C157	100P	47P
C211	51P	39P
C218	7P	6P
C237	56P	47P
C247	18P	30P
C248	150P	120P
C250	180P	220P
IC102	LC89915M	LC89925M
L112	56uH	47uH
L118	100uH	68uH
R136	4700	3900
R192	5100	4700
R193	5100	4700
R210	1000	470
R251	1000	1200
R255	3900	15K
X101	3.5795454MHz	4.433619MHz

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB	⇨	⇨⇨	⇨⇨⇨	

HF-27 (AUDIO PROCESS) PRINTED WIRING BOARD

– Ref. No. HF-27 BOARD : 2,000 Series –

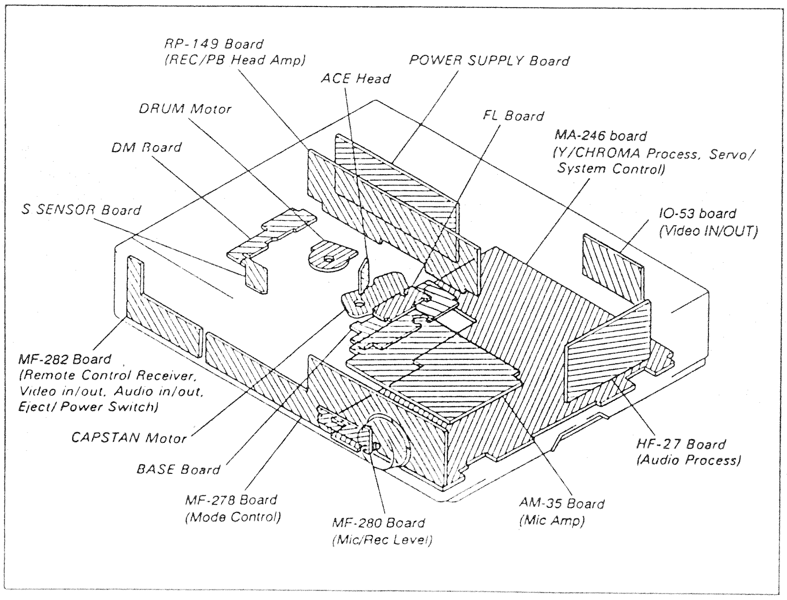

TO
MA-246 BOARD
CN306
HF-27 BOARD
A
B
C
D
1
2
3
4
5
6
7
02
IC201
IC204
CN201
CN202
CN203
RV201
RV202
RV203
RV204
RV205
RV206
RV207
1-646-751-

● ○— : Parts extracted from the component side.
● ○ : Through hole.
● ▨ : Pattern on the side which is seen.
● ▨ : Pattern of the rear side.

HF-27 BOARD

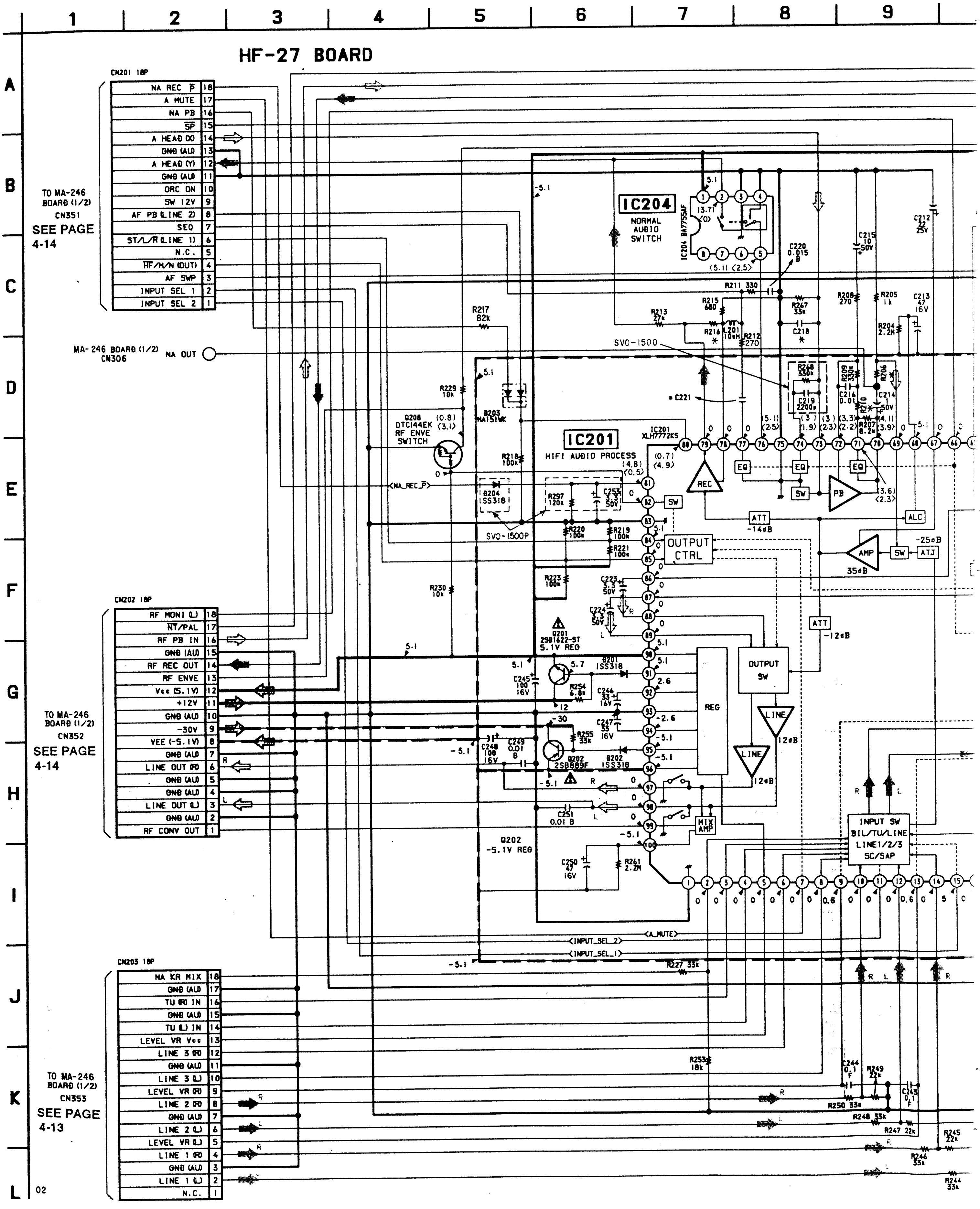
CN201	D-2
CN202	D-4
CN203	D-7
D201	C-2
D202	C-2
D203	D-1
D204	D-1
IC201	B-5
IC204	B-1
Q201	D-2
Q202	D-2
Q203	A-7
Q205	B-7
Q206	B-7
Q208	D-3

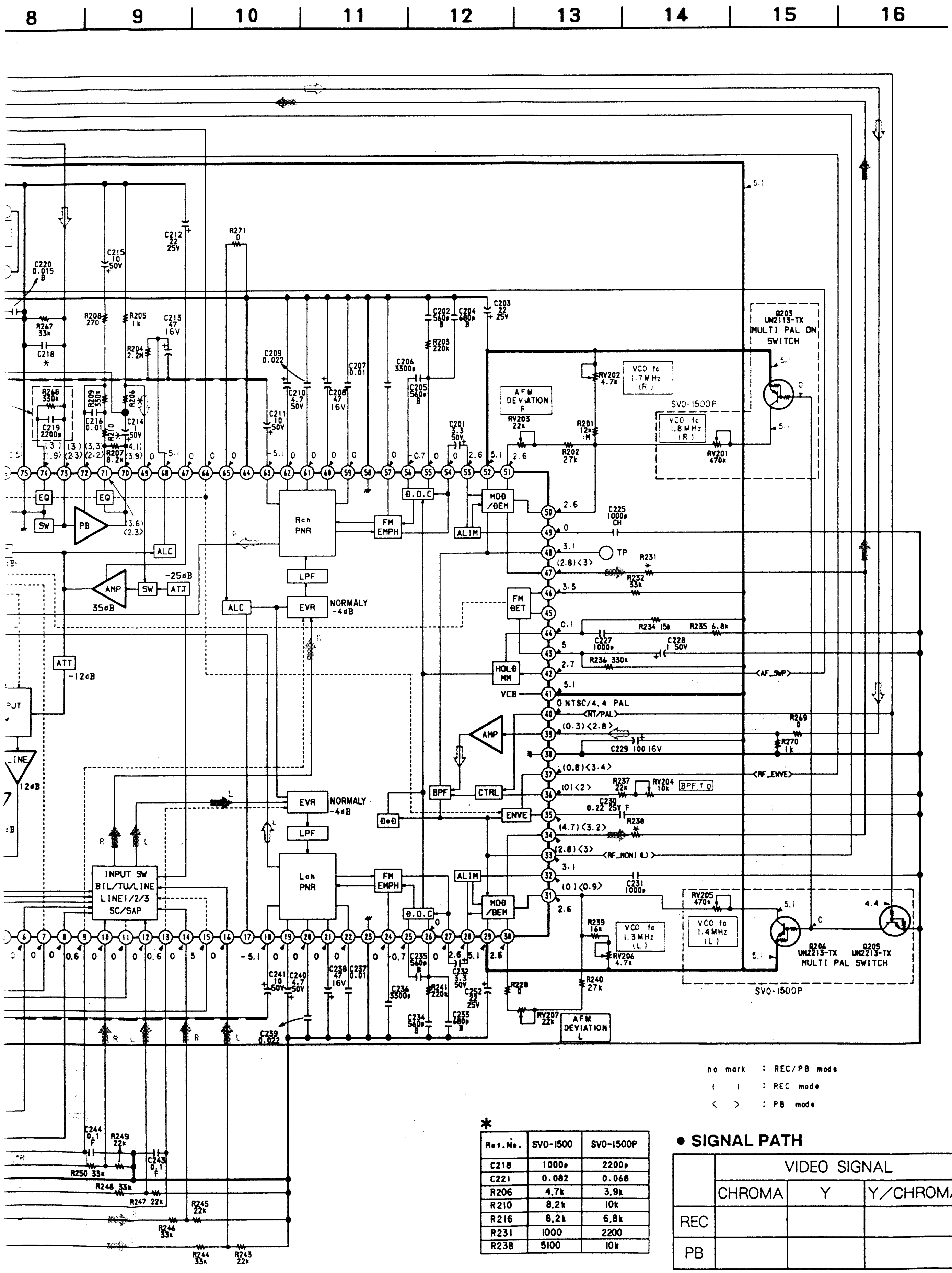
Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identi une marque ⚠ sont c pour la sécurité. Ne les remplacer que p pièce portant le numéro fié.


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
DM Board
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/ Power Switch)
CAPSTAN Motor
HF-27 Board
(Audio Process)
BASE Board
MF-278 Board
(Mode Control)
AM-35 Board
(Mic Amp)
MF-280 Board
(Mic/Rec Level)

HF-27 (AUDIO PROCESS) SCHEMATIC DIAGRAM

– Ref. No. HF-27 BOARD : 2,000 Series –


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
HF-27 BOARD
CN201 18P
NA REC P̄ 18
A MUTE 17
NA PB 16
SP 15
A HEAD (X) 14
GND (AU) 13
A HEAD (Y) 12
GND (AU) 11
DRC ON 10
SW 12V 9
AF PB (LINE 2) 8
SEQ 7
ST/L/R (LINE 1) 6
N.C. 5
HF/M/N (OUT) 4
AF SWP 3
INPUT SEL 1 2
INPUT SEL 2 1
TO MA-246 BOARD (1/2) CN351
SEE PAGE 4-14
MA-246 BOARD (1/2) CN306
NA OUT
CN202 18P
RF MONI (L) 18
NT/PAL 17
RF PB IN 16
GND (AU) 15
RF REC OUT 14
RF ENVE 13
Vcc (5.1V) 12
+12V 11
GND (AU) 10
-30V 9
VEE (-5.1V) 8
GND (AU) 7
LINE OUT (R) 6
GND (AU) 5
GND (AU) 4
LINE OUT (L) 3
GND (AU) 2
RF CONV OUT 1
TO MA-246 BOARD (1/2) CN352
SEE PAGE 4-14
CN203 18P
NA KR MIX 18
GND (AU) 17
TU (R) IN 16
GND (AU) 15
TU (L) IN 14
LEVEL VR Vcc 13
LINE 3 (R) 12
GND (AU) 11
LINE 3 (L) 10
LEVEL VR (R) 9
LINE 2 (R) 8
GND (AU) 7
LINE 2 (L) 6
LEVEL VR (L) 5
LINE 1 (R) 4
GND (AU) 3
LINE 1 (L) 2
N.C. 1
TO MA-246 BOARD (1/2) CN353
SEE PAGE 4-13
02
IC204
NORMAL AUDIO SWITCH
IC204 BA7755AF
C220 0.015 B
C215 10 50V
C212 22 25V
R211 330
R215 680
R267 33k
R208 270
R205 1k
C213 47 16V
R217 82k
R213 27k
R216 *
L201 10mH
R212 270
C218 *
R204 2.2M
SVO-1500
R268 330k
C219 2200p
R209 33k
C216 0.01
R206
C214 1 50V
R210
R207 8.2k
* C221
R229 10k
D203 MA151WK
Q208 DTC144EK RF ENVE SWITCH
R218 100k
IC201
HIFI AUDIO PROCESS
IC201 XLH7772KS
REC
EQ
SW
PB
ATT -14dB
ALC
AMP 35dB
ATJ -25dB
<NA_REC_P̄>
D204 1SS318
R297 120k
C255 3.3 50V
SVO-1500P
R220 100k
R219 100k
R221 100k
OUTPUT CTRL
R223 100k
C223 3.3 50V
C224 3.3 50V
R230 10k
ATT -12dB
Q201 2SB1622-ST 5.1V REG
D201 1SS318
C245 100 16V
R254 6.8k
C246 33 16V
OUTPUT SW
REG
LINE 12dB
C247 33 16V
R255 33k
C248 100 16V
C249 0.01 B
Q202 2SB889F
D202 1SS318
C251 0.01 B
MIX AMP
Q202 -5.1V REG
C250 47 16V
R261 2.2M
INPUT SW BIL/TU/LINE LINE1/2/3 SC/SAP
<A_MUTE>
<INPUT_SEL_2>
<INPUT_SEL_1>
R227 33k
R253 18k
C244 0.1 F
R249 22k
C243 0.1 F
R250 33k
R248 33k
R247 22k
R245 22k
R246 33k
R244 33k
5.1
-5.1
12
-30
2.6
-2.6
5.7
(0.8)
(3.1)
(4.8)
(0.5)
(0.7)
(4.9)
(3.7)
(0)
(5.1)
(2.5)
(3.6)
(2.3)
0.6
R
L


8
9
10
11
12
13
14
15
16
EQ
SW
PB
ALC
AMP
35dB
ATJ
-25dB
ATT
-12dB
INPUT SW
BIL/TU/LINE
LINE1/2/3
SC/SAP
Rch PNR
Lch PNR
LPF
EVR
NORMALY -4dB
FM EMPH
D.O.C
MOD /DEM
ALIM
FM DET
HOLD MM
VCB
BPF
CTRL
ENVE
DeD
TP
AFM DEVIATION R
AFM DEVIATION L
VCO fc 1.7MHz (R)
VCO fc 1.8MHz (R)
VCO fc 1.3MHz (L)
VCO fc 1.4MHz (L)
SVO-1500P
Q203 UN2113-TX MULTI PAL ON SWITCH
Q206 UN2213-TX
Q205 UN2213-TX
MULTI PAL SWITCH
0 NTSC/4.4 PAL
NT/PAL
AF_SWP
RF_ENVE
RF_MONI (L)
BPF f0
RV201 470k
RV202 4.7k
RV203 22k
RV204 10k
RV205 470k
RV206 4.7k
RV207 22k
R271 0
C212 22 25V
C215 10 50V
C220 0.015 B
C239 0.022
C229 100 16V
C225 1000p CH
R231
R232 33k
R234 15k
R235 6.8k
R236 330k
R269 0
R270 1k

no mark : REC/PB mode

( ) : REC mode

< > : PB mode

*

Ref.No.	SVO-1500	SVO-1500P
C218	1000p	2200p
C221	0.082	0.068
R206	4.7k	3.9k
R210	8.2k	10k
R216	8.2k	6.8k
R231	1000	2200
R238	5100	10k

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

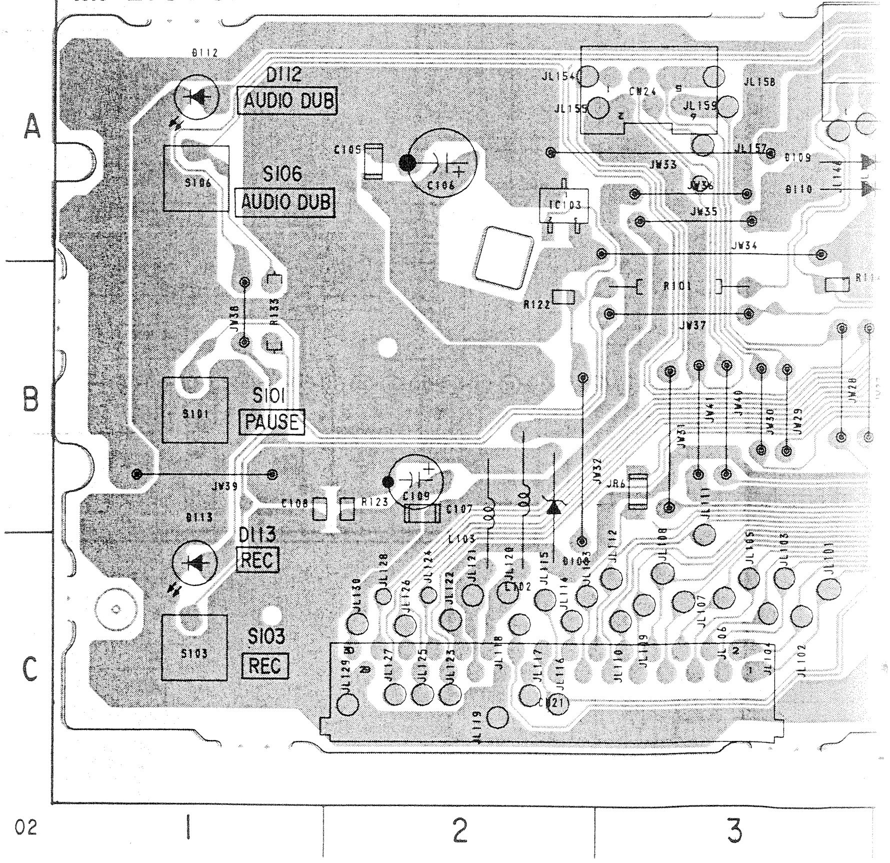
MF-278 (MODE CONTROL), MF-282 (REMOTE CONTROL RECEIVER,
AUDIO IN/OUT, EJECT/POWER SWITCH) PRINTED WIRING BOARDS

– Ref. No. MF-278 BOARD : 4,000 Series, MF-282 BOARD : 1,000 Series –

MF-278 BOARD

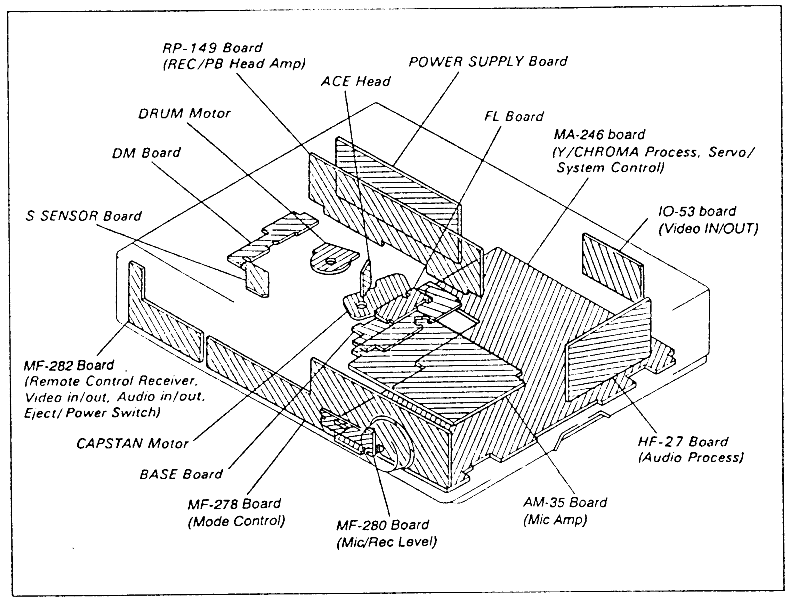
CN021	C - 2
CN022	C - 13
CN023	A - 4
CN024	A - 3
D108	B - 2
D109	A - 3
D110	A - 3
D111	C - 7
D112	A - 1
D113	C - 1
D114	C - 7
D115	C - 7
IC101	A - 6
IC102	A - 5
IC103	A - 2
Q101	A - 7

MF-278 BOARD


A
B
C
D112
AUDIO DUB
S106
AUDIO DUB
S101
PAUSE
D113
REC
S103
REC
C105
C106
IC103
CN24
JL154
JL155
JL158
JL159
JL157
D109
D110
JW33
JW35
JW34
R101
R122
JW37
JW38
R133
JW39
C108
R123
C109
C107
L103
D108
JW32
JR6
CN21
02
1
2
3

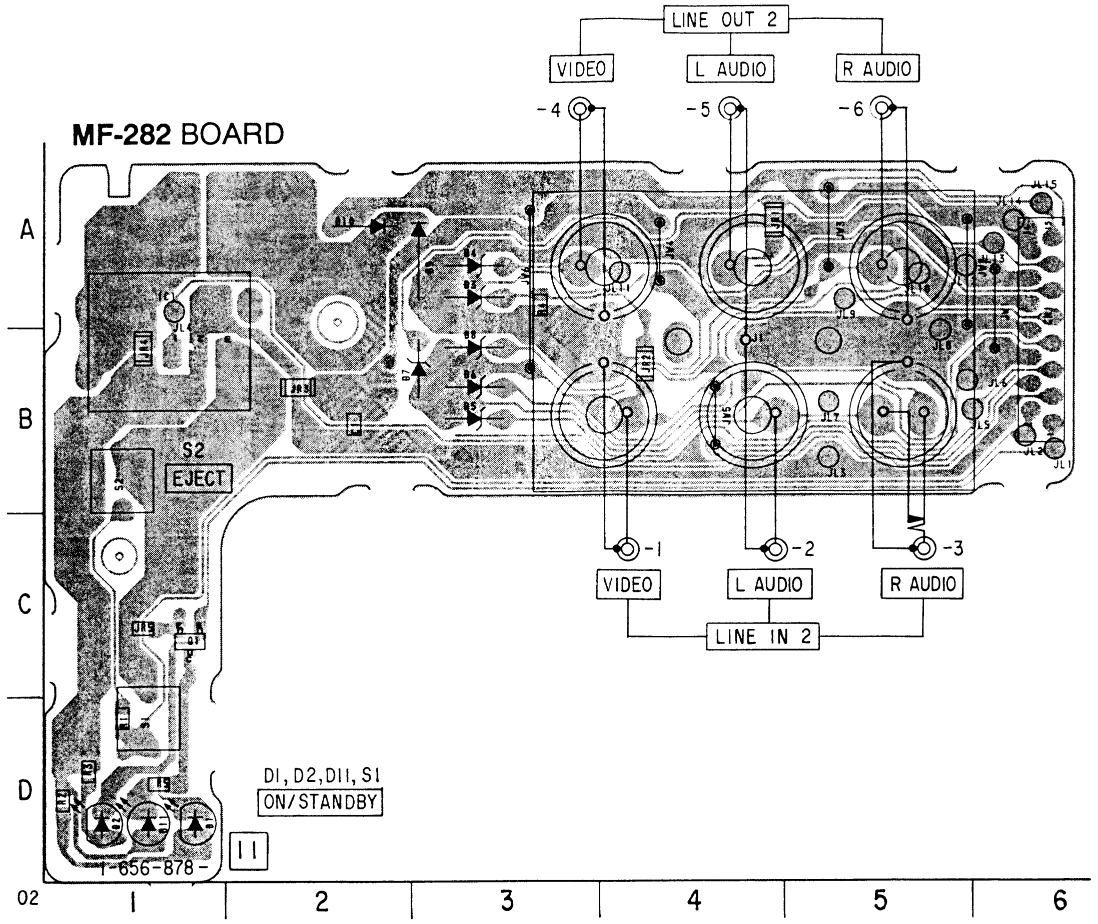
CONTROL RECEIVER, VIDEO IN/OUT,
TED WIRING BOARDS

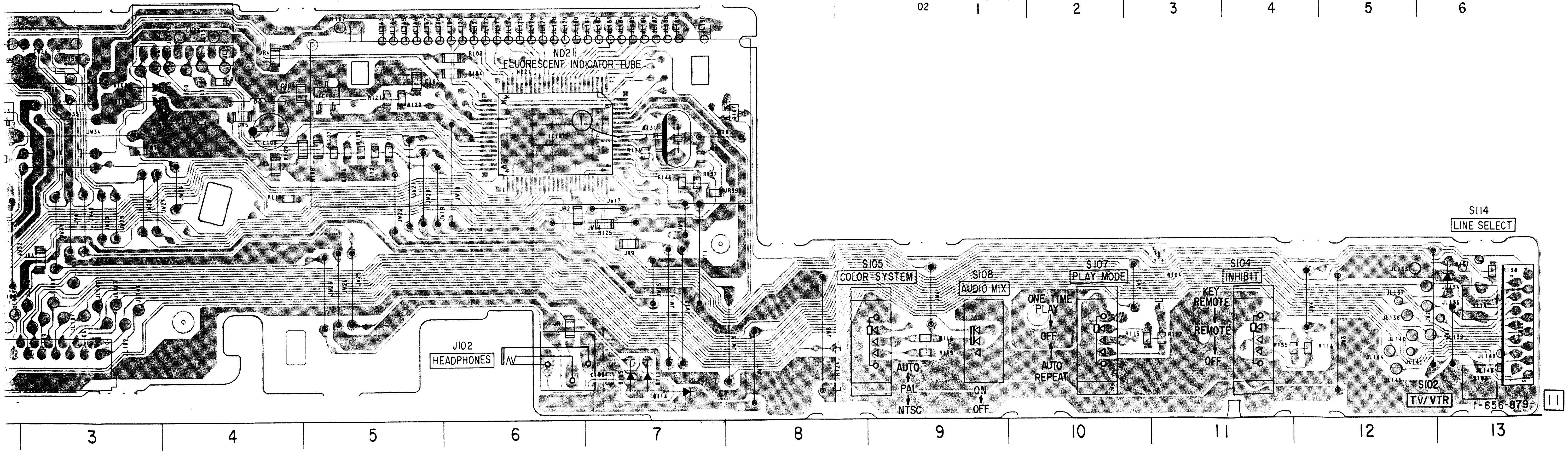
RD : 1,000 Series –


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
MA-246 board
(Y/CHROMA Process, Servo/System Control)
DM Board
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver, Video in/out, Audio in/out, Eject/Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

MF-282 BOARD

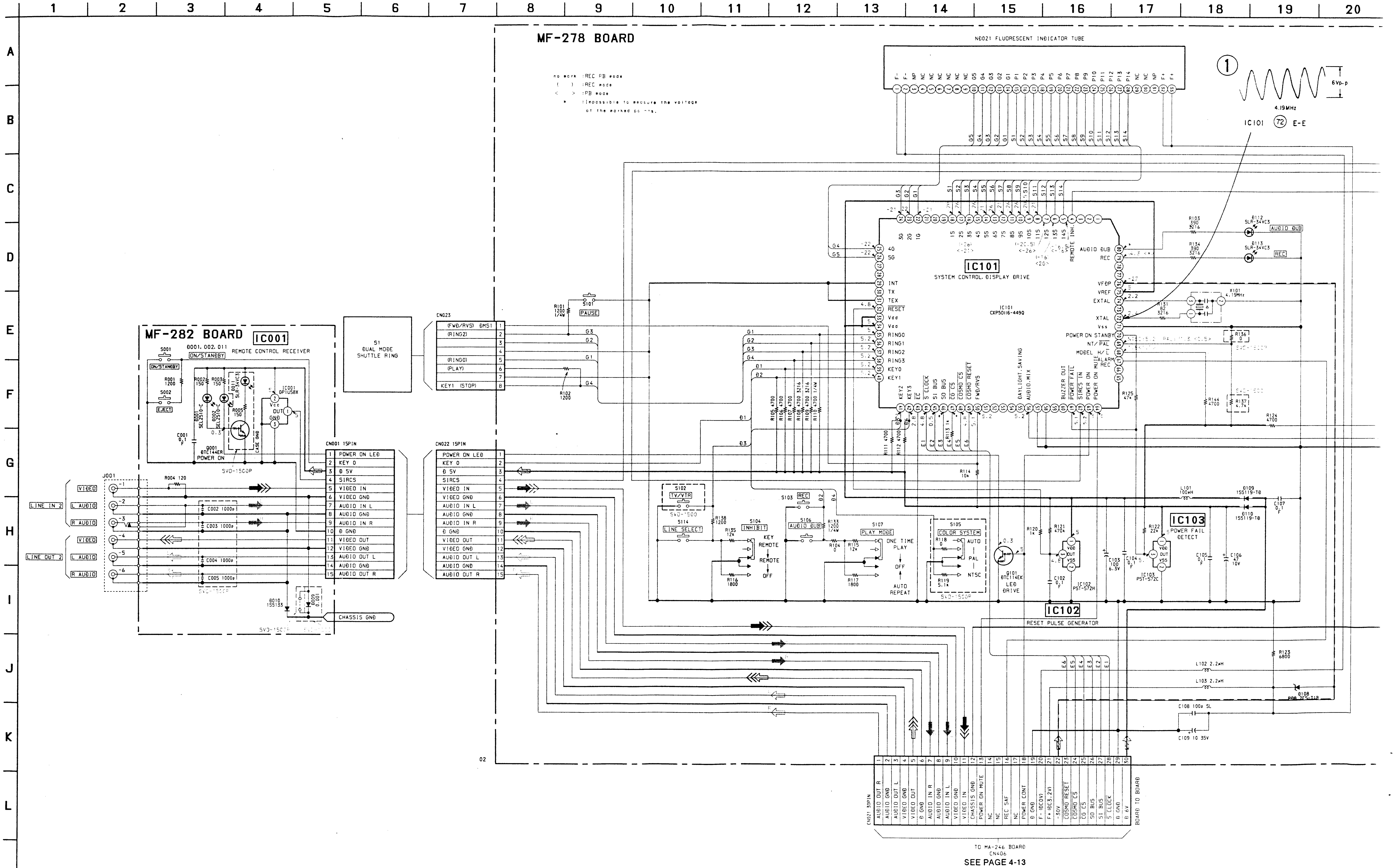
CN001	A - 6
D001	D - 1
D002	D - 1
D009	A - 3
D010	A - 2
D011	D - 1
IC001	A - 1
Q001	C - 1


MF-282 BOARD
LINE OUT 2
VIDEO
L AUDIO
R AUDIO
-4
-5
-6
A
B
C
D
S2
EJECT
-1
-2
-3
VIDEO
L AUDIO
R AUDIO
LINE IN 2
D1, D2, D11, S1
ON/STANDBY
11
1-656-878-
02
1
2
3
4
5
6

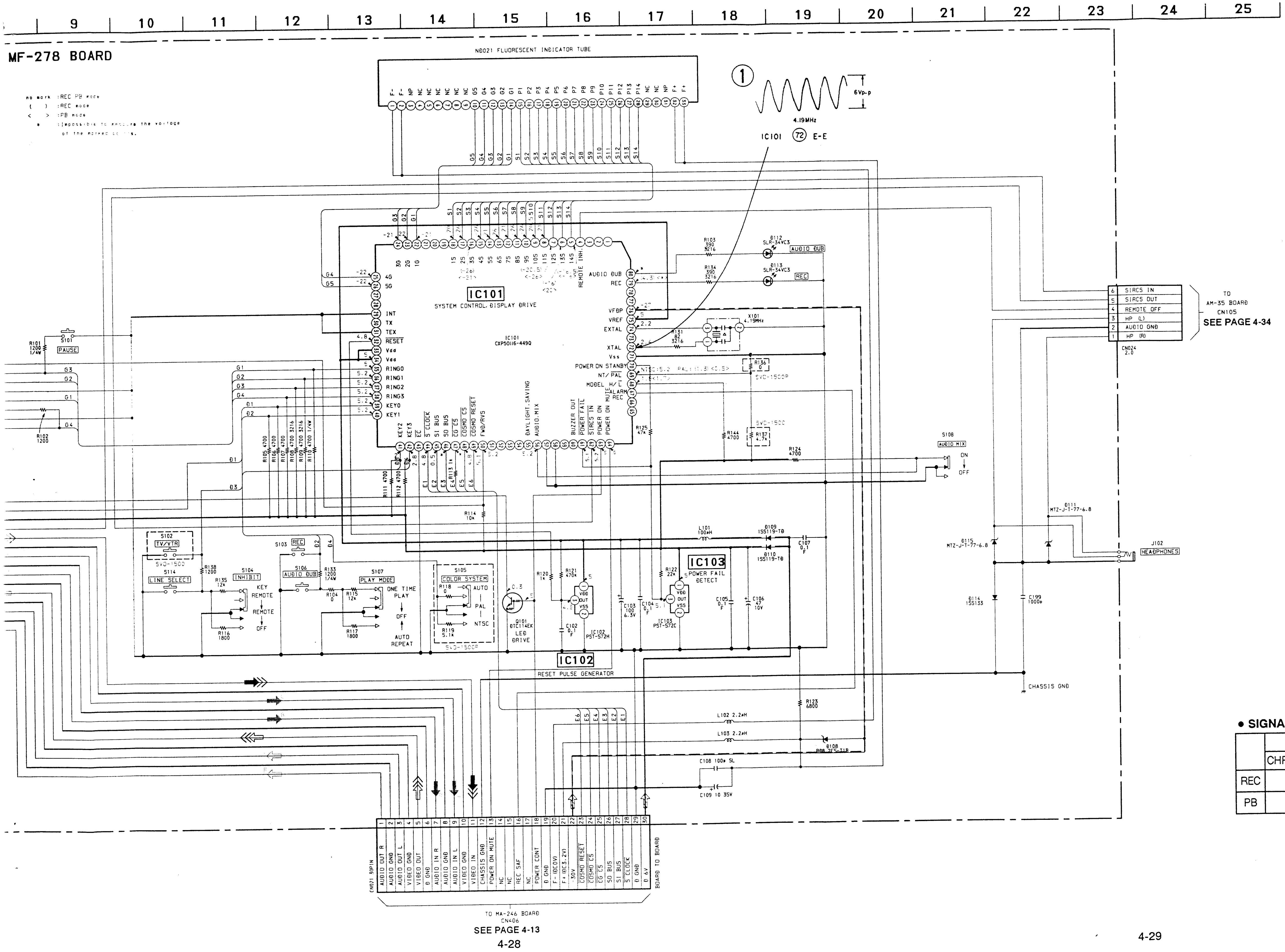

ND21
FLUORESCENT INDICATOR TUBE
IC101
J102
HEADPHONES
S105
COLOR SYSTEM
AUTO
PAL
NTSC
S108
AUDIO MIX
ON
OFF
S107
PLAY MODE
ONE TIME PLAY
OFF
AUTO REPEAT
S104
INHIBIT
KEY REMOTE
REMOTE
OFF
S114
LINE SELECT
S102
TV/VTR
1-656-879-
11
3
4
5
6
7
8
9
10
11
12
13

MF-278 (MODE CONTROL), MF-282 (REMOTE CONTROL RECEIVER, VIDEO IN/OUT, AUDIO IN/OUT, EJECT/POWER SWITCH) SCHEMATIC DIAGRAMS

– Ref. No. MF-278 BOARD : 4,000 Series, MF-282 BOARD : 1,000 Series –



MF-278 BOARD
ND021 FLUORESCENT INDICATOR TUBE
no mark : REC PB mode
( ) : REC mode
< > : PB mode
* : Impossible to measure the voltage of the marked points.
①
6Vp-p
4.19MHz
IC101 (72) E-E
IC101
SYSTEM CONTROL, DISPLAY DRIVE
IC101 CXP50116-449Q
S101 PAUSE
CN023
S1 DUAL MODE SHUTTLE RING
MF-282 BOARD
IC001
D001, 002, 011 REMOTE CONTROL RECEIVER
S001 ON/STANDBY
S002 EJECT
Q001 DTC144ER POWER ON
IC001 GP1U58X
J001
LINE IN 2
LINE OUT 2
VIDEO
L AUDIO
R AUDIO
CN001 15PIN
CN022 15PIN
POWER ON LED
KEY 0
D 5V
SIRCS
VIDEO IN
VIDEO GND
AUDIO IN L
AUDIO GND
AUDIO IN R
D GND
VIDEO OUT
VIDEO GND
AUDIO OUT L
AUDIO GND
AUDIO OUT R
CHASSIS GND
S102 TV/VTR
S114 LINE SELECT
S104 INHIBIT
KEY REMOTE
REMOTE OFF
S103 REC
S106 AUDIO DUB
S107 PLAY MODE
ONE TIME PLAY
OFF
AUTO REPEAT
S105 COLOR SYSTEM
AUTO
PAL
NTSC
Q101 DTC114EK LED DRIVE
IC102
RESET PULSE GENERATOR
IC102 PST-572H
IC103
POWER FAIL DETECT
IC103 PST-572C
X101 4.19MHz
D112 SLR-34VC3 AUDIO DUB
D113 SLR-34VC3 REC
L101 100µH
D109 1SS119-T0
D110 1SS119-T0
L102 2.2µH
L103 2.2µH
D108 RD6.2ES-T1B
C108 100p SL
C109 10 35V
CN021 30PIN
BOARD TO BOARD
TO MA-246 BOARD CN406
SEE PAGE 4-13


MF-278 BOARD
ND021 FLUORESCENT INDICATOR TUBE
IC101 SYSTEM CONTROL, DISPLAY DRIVE
IC101 CXP50116-449Q
IC102 RESET PULSE GENERATOR
IC102 PST-572H
IC103 POWER FAIL DETECT
IC103 PST-572C
Q101 DTC114EK LED DRIVE
X101 4.19MHz
4.19MHz
6Vp-p
IC101 (72) E-E
S101 PAUSE
S102 TV/VTR
S103 REC
S104 INHIBIT
S105 COLOR SYSTEM
S106 AUDIO DUB
S107 PLAY MODE
S108 AUDIO MIX
S114 LINE SELECT
D112 SLR-34VC3 AUDIO DUB
D113 SLR-34VC3 REC
J102 HEADPHONES
CN024
SIRCS IN
SIRCS OUT
REMOTE OFF
HP (L)
AUDIO GND
HP (R)
TO AM-35 BOARD CN105
SEE PAGE 4-34
CHASSIS GND
CN021 30PIN
AUDIO OUT R
AUDIO GND
AUDIO OUT L
VIDEO GND
VIDEO OUT
D GND
AUDIO IN R
AUDIO GND
AUDIO IN L
VIDEO GND
VIDEO IN
CHASSIS GND
POWER ON MUTE
NC
NC
REC SAF
NC
POWER CONT
D GND
F- (DC0V)
F+ (DC3.2V)
-30V
COSMO RESET
CG CS
SO BUS
SI BUS
S CLOCK
D GND
D 6V
BOARD TO BOARD
TO MA-246 BOARD CN406
SEE PAGE 4-13

● **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	➡
PB			⇨	⇨

MODE CONTROL
MA-278/MF-282

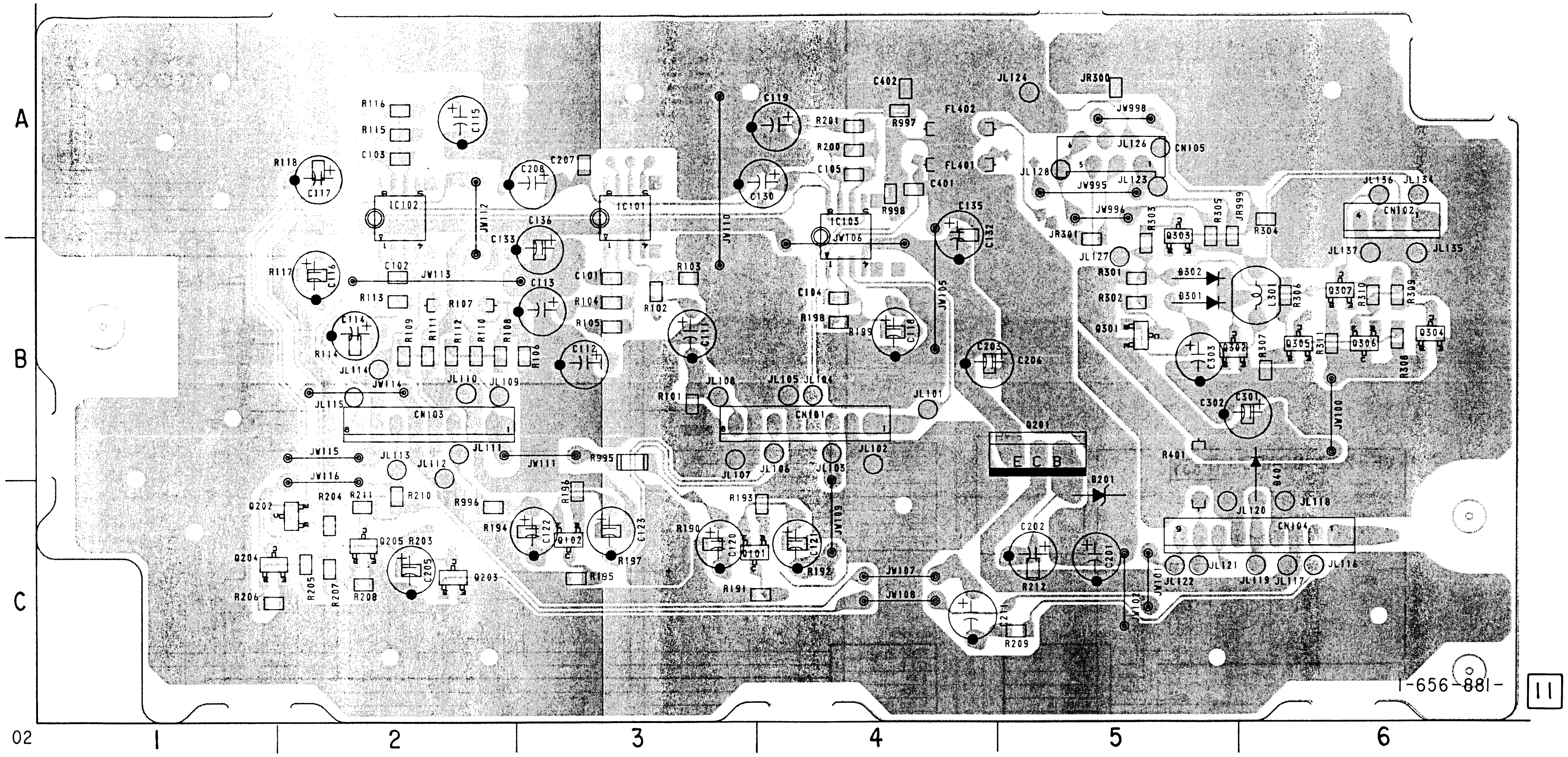
AM-35 (MIC AMP), MF-280 (MIC/REC LEVEL) PRINTED WIRING BOARDS

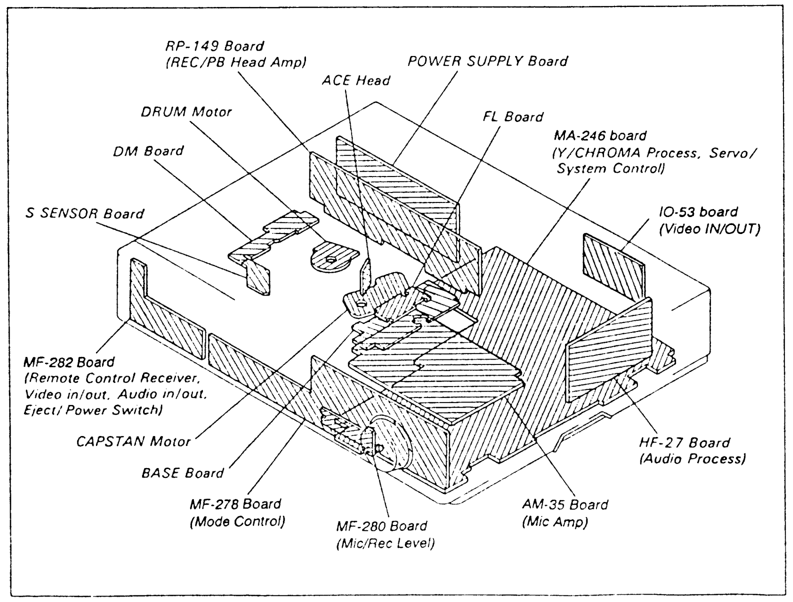
– Ref. No. AM-35 and MF-280 BOARDS : 1,000 Series –

AM-35 BOARD

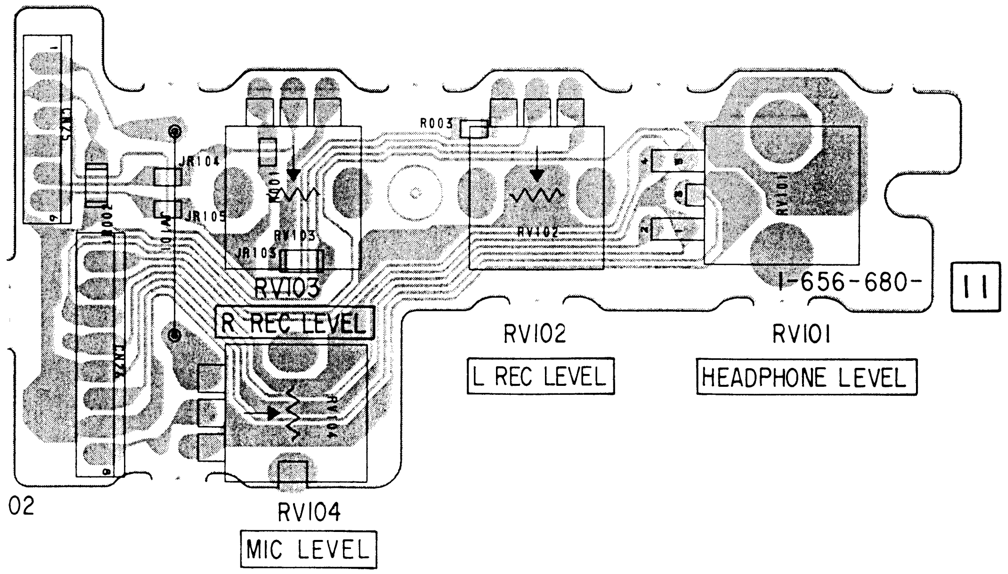
AM-35 BOARD

CN101	B - 4
CN102	A - 6
CN103	B - 2
CN104	C - 6
CN105	A - 5
D201	C - 5
D301	B - 5
D302	B - 5
D401	B - 6
IC101	A - 3
IC102	A - 2
IC103	A - 4
Q101	C - 3
Q102	C - 3
Q201	B - 5
Q202	C - 2
Q203	C - 2
Q204	C - 1
Q205	C - 2
Q301	B - 5
Q302	B - 5
Q303	A - 5
Q304	B - 6
Q305	B - 6
Q306	B - 6
Q307	B - 6


A
B
C
02
1
2
3
4
5
6
IC101
IC102
IC103
CN101
CN102
CN103
CN104
CN105
Q201
E C B
D201
1-656-881-
11

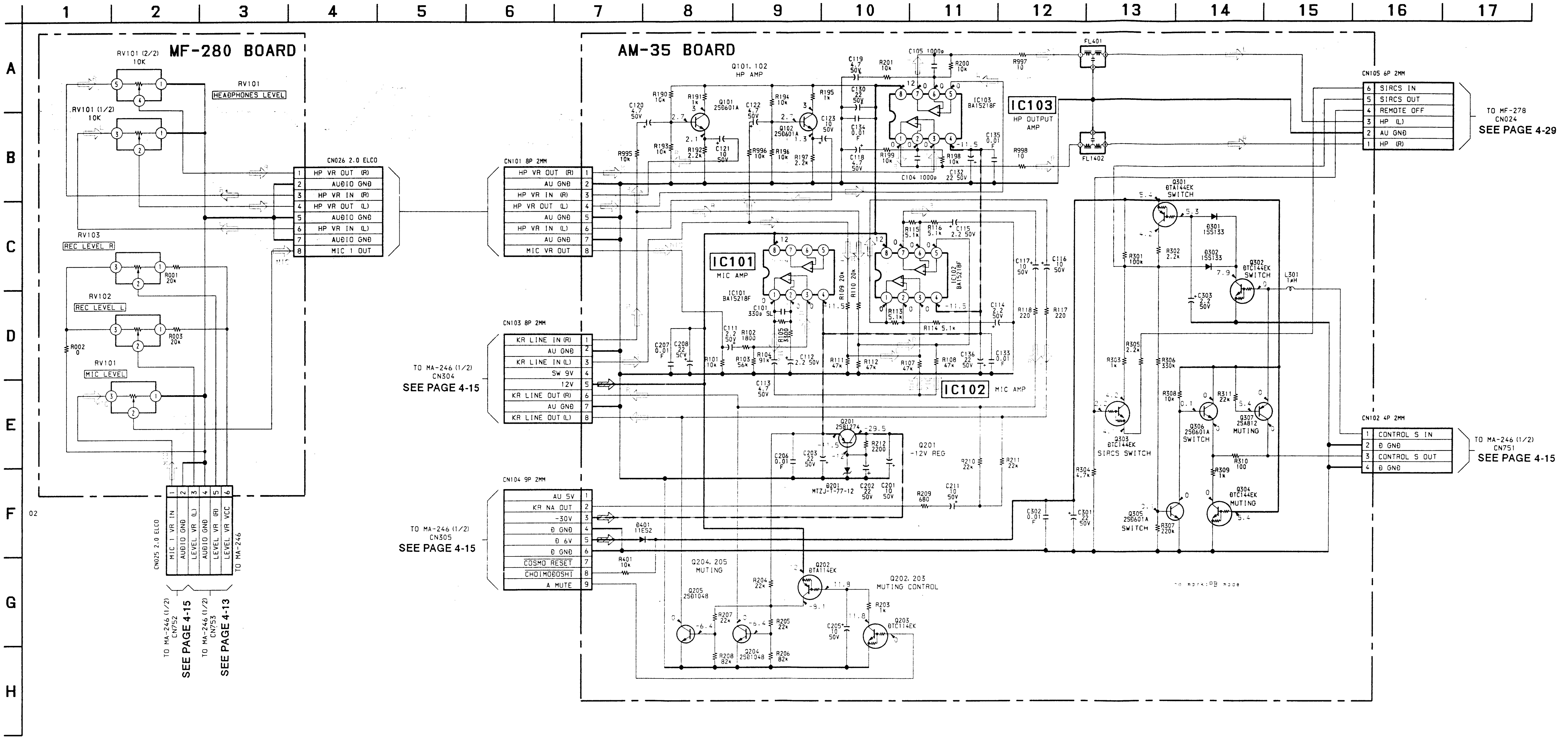

RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

MF-280 BOARD


R003
RV101
RV102
RV103
RV104
JR104
JR105
JR103
1-656-680-
11
RV103
R REC LEVEL
RV102
L REC LEVEL
RV101
HEADPHONE LEVEL
02
RV104
MIC LEVEL

AM-35 (MIC AMP), MF-280 (MIC/REC LEVEL) SCHEMATIC DIAGRAMS

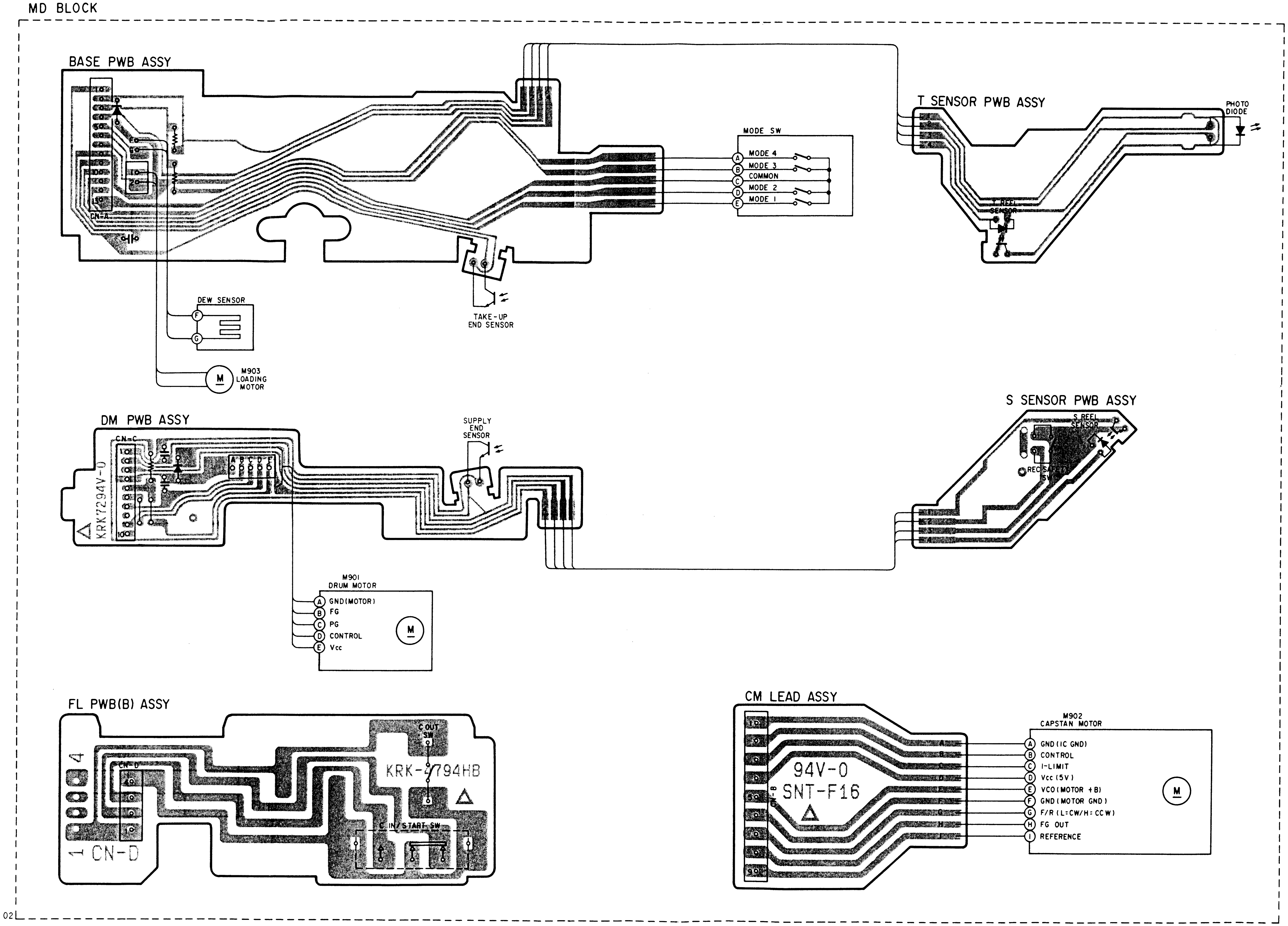
– Ref. No. AM-35 and MF-280 BOARDS : 1,000 Series –


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H
MF-280 BOARD
RV101 (2/2) 10K
RV101 HEADPHONES LEVEL
RV101 (1/2) 10K
RV103 REC LEVEL R
RV102 REC LEVEL L
RV101 MIC LEVEL
R001 20k
R002 0
R003 20k
CN026 2.0 ELCO
1 HP VR OUT (R)
2 AUDIO GND
3 HP VR IN (R)
4 HP VR OUT (L)
5 AUDIO GND
6 HP VR IN (L)
7 AUDIO GND
8 MIC 1 OUT
CN025 2.0 ELCO
1 MIC 1 VR IN
2 AUDIO GND
3 LEVEL VR (L)
4 AUDIO GND
5 LEVEL VR (R)
6 LEVEL VR VCC
TO MA-246
TO MA-246 (1/2) CN752 SEE PAGE 4-15
TO MA-246 (1/2) CN753 SEE PAGE 4-13
AM-35 BOARD
Q101, 102 HP AMP
Q101 2SD601A
Q102 2SD601A
CN101 8P 2MM
1 HP VR OUT (R)
2 AU GND
3 HP VR IN (R)
4 HP VR OUT (L)
5 AU GND
6 HP VR IN (L)
7 AU GND
8 MIC VR OUT
CN103 8P 2MM
1 KR LINE IN (R)
2 AU GND
3 KR LINE IN (L)
4 SW 9V
5 12V
6 KR LINE OUT (R)
7 AU GND
8 KR LINE OUT (L)
TO MA-246 (1/2) CN304 SEE PAGE 4-15
CN104 9P 2MM
1 AU 5V
2 KR NA OUT
3 -30V
4 D GND
5 D 6V
6 D GND
7 COSMO RESET
8 CHOIMODOSHI
9 A MUTE
TO MA-246 (1/2) CN305 SEE PAGE 4-15
IC101 MIC AMP
IC101 BA15218F
IC102 MIC AMP
IC102 BA15218F
IC103 HP OUTPUT AMP
IC103 BA15218F
FL401
FL402
D401 11ES2
R401 10k
Q201 2SB1274
Q201 -12V REG
D201 MTZJ-T-77-12
Q204, 205 MUTING
Q205 2SD1048
Q204 2SD1048
Q202 DTA114EK
Q202, 203 MUTING CONTROL
Q203 DTC114EK
Q301 DTA144EK SWITCH
D301 1SS133
D302 1SS133
Q302 DTC144EK SWITCH
L301 1mH
Q303 DTC144EK SIRCS SWITCH
Q306 2SD601A SWITCH
Q307 2SA812 MUTING
Q305 2SD601A SWITCH
Q304 DTC144EK MUTING
CN105 6P 2MM
6 SIRCS IN
5 SIRCS OUT
4 REMOTE OFF
3 HP (L)
2 AU GND
1 HP (R)
TO MF-278 CN024 SEE PAGE 4-29
CN102 4P 2MM
1 CONTROL S IN
2 D GND
3 CONTROL S OUT
4 D GND
TO MA-246 (1/2) CN751 SEE PAGE 4-15

• SIGNAL PATH

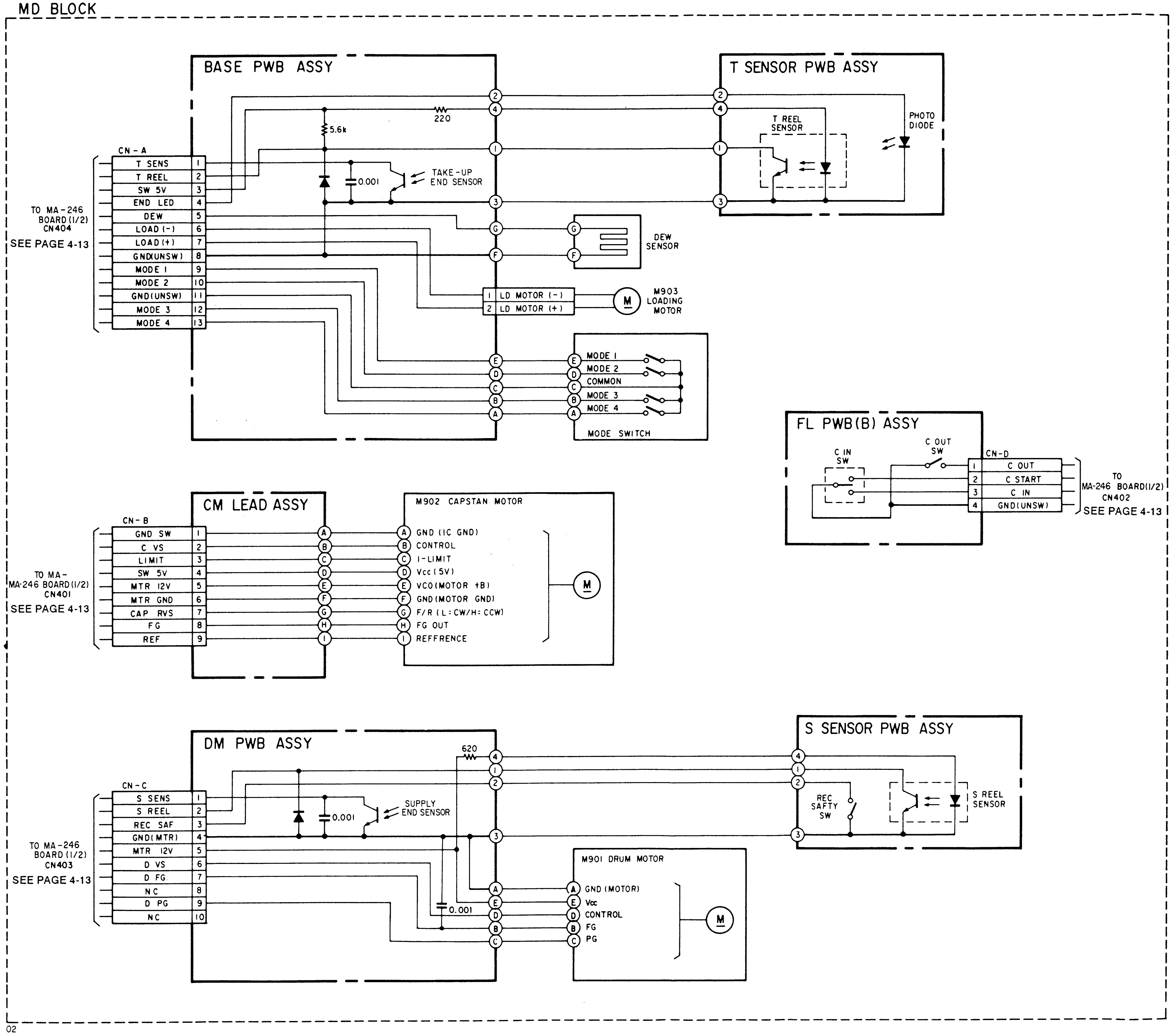
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				⇨

MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) PRINTED WIRING BOARDS


MD BLOCK
BASE PWB ASSY
CN-A
DEW SENSOR
F
G
M903
LOADING
MOTOR
M
TAKE-UP
END SENSOR
MODE SW
A MODE 4
B MODE 3
C COMMON
D MODE 2
E MODE 1
T SENSOR PWB ASSY
1
2
3
4
T REEL
SENSOR
PHOTO
DIODE
DM PWB ASSY
CN-C
1
10
KRK7294V-0
A B C D E
SUPPLY
END
SENSOR
M901
DRUM MOTOR
A GND(MOTOR)
B FG
C PG
D CONTROL
E Vcc
M
S SENSOR PWB ASSY
S REEL
SENSOR
REC SAFETY
SW
FL PWB(B) ASSY
4
1
CN-D
C OUT
SW
KRK-4794HB
C IN/START SW
CM LEAD ASSY
94V-0
SNT-F16
CN-B
1
5
9
A
B
C
D
E
F
G
H
I
M902
CAPSTAN MOTOR
A GND(IC GND)
B CONTROL
C I-LIMIT
D Vcc(5V)
E VCO(MOTOR +B)
F GND(MOTOR GND)
G F/R(L:CW/H:CCW)
H FG OUT
I REFERENCE
M
02

MD BLOCK

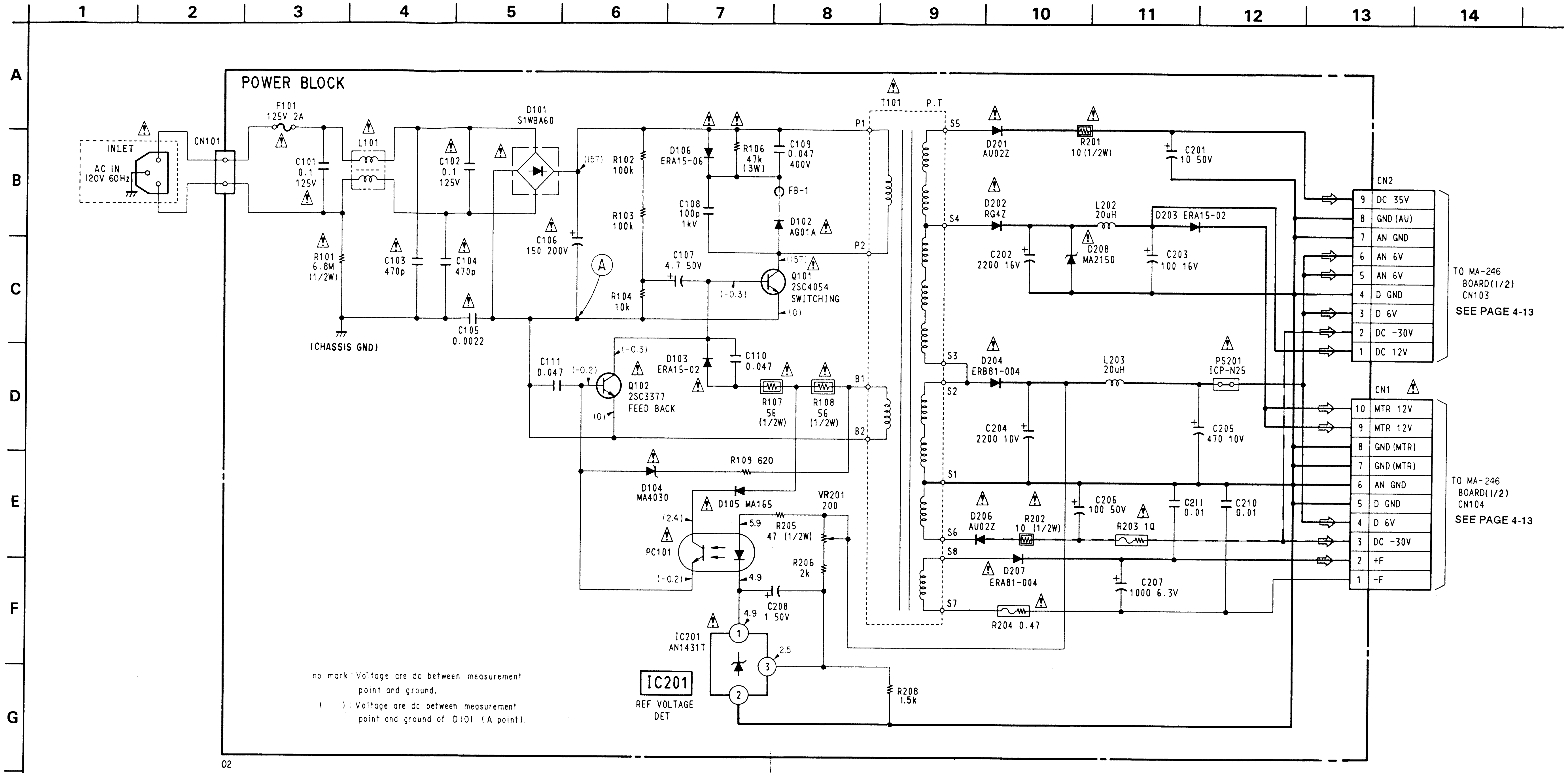
MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) SCHEMATIC DIAGRAMS


MD BLOCK
BASE PWB ASSY
T SENSOR PWB ASSY
CN - A
T SENS 1
T REEL 2
SW 5V 3
END LED 4
DEW 5
LOAD (-) 6
LOAD (+) 7
GND(UNSW) 8
MODE 1 9
MODE 2 10
GND(UNSW) 11
MODE 3 12
MODE 4 13
TO MA-246 BOARD (1/2) CN404
SEE PAGE 4-13
5.6k
220
0.001
TAKE-UP END SENSOR
T REEL SENSOR
PHOTO DIODE
DEW SENSOR
1 LD MOTOR (-)
2 LD MOTOR (+)
M
M903 LOADING MOTOR
MODE 1
MODE 2
COMMON
MODE 3
MODE 4
MODE SWITCH
FL PWB(B) ASSY
C IN SW
C OUT SW
CN-D
1 C OUT
2 C START
3 C IN
4 GND(UNSW)
TO MA-246 BOARD(1/2) CN402
SEE PAGE 4-13
CM LEAD ASSY
CN - B
GND SW 1
C VS 2
LIMIT 3
SW 5V 4
MTR 12V 5
MTR GND 6
CAP RVS 7
FG 8
REF 9
TO MA- MA-246 BOARD (1/2) CN401
SEE PAGE 4-13
M902 CAPSTAN MOTOR
GND (IC GND)
CONTROL
I-LIMIT
Vcc (5V)
VCO (MOTOR +B)
GND (MOTOR GND)
F/R (L: CW/H: CCW)
FG OUT
REFFRENCE
M
DM PWB ASSY
S SENSOR PWB ASSY
620
CN - C
S SENS 1
S REEL 2
REC SAF 3
GND(MTR) 4
MTR 12V 5
D VS 6
D FG 7
NC 8
D PG 9
NC 10
TO MA-246 BOARD (1/2) CN403
SEE PAGE 4-13
0.001
SUPPLY END SENSOR
REC SAFTY SW
S REEL SENSOR
M901 DRUM MOTOR
GND (MOTOR)
Vcc
CONTROL
FG
PG
M
0.001
02

SVO-1500

POWER BLOCK SCHEMATIC DIAGRAM

– Ref. No. POWER BLOCK : 5,000 Series – **(SVO-1500)**


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
POWER BLOCK
INLET
AC IN
120V 60Hz
CN101
F101
125V 2A
C101
0.1
125V
L101
C102
0.1
125V
D101
S1WBA60
R101
6.8M
(1/2W)
C103
470p
C104
470p
C105
0.0022
(CHASSIS GND)
C106
150 200V
(157)
R102
100k
R103
100k
R104
10k
A
D106
ERA15-06
R106
47k
(3W)
C109
0.047
400V
C108
100p
1kV
FB-1
D102
AG01A
C107
4.7 50V
(-0.3)
Q101
2SC4054
SWITCHING
(157)
(0)
C111
0.047
(-0.2)
(-0.3)
Q102
2SC3377
FEED BACK
(0)
D103
ERA15-02
C110
0.047
R107
56
(1/2W)
R108
56
(1/2W)
R109 620
D104
MA4030
D105 MA165
(2.4)
PC101
(-0.2)
5.9
R205
47 (1/2W)
VR201
200
R206
2k
4.9
C208
1 50V
4.9
IC201
AN1431T
2.5
R208
1.5k
IC201
REF VOLTAGE
DET
T101
P.T
P1
P2
B1
B2
S5
S4
S3
S2
S1
S6
S8
S7
D201
AU02Z
R201
10 (1/2W)
C201
10 50V
D202
RG4Z
L202
20uH
D203 ERA15-02
C202
2200 16V
D208
MA2150
C203
100 16V
D204
ERB81-004
L203
20uH
PS201
ICP-N25
C204
2200 10V
C205
470 10V
D206
AU02Z
R202
10 (1/2W)
C206
100 50V
R203 1Ω
C211
0.01
C210
0.01
D207
ERA81-004
C207
1000 6.3V
R204 0.47
CN2
9 DC 35V
8 GND (AU)
7 AN GND
6 AN 6V
5 AN 6V
4 D GND
3 D 6V
2 DC -30V
1 DC 12V
TO MA-246
BOARD(1/2)
CN103
SEE PAGE 4-13
CN1
10 MTR 12V
9 MTR 12V
8 GND (MTR)
7 GND (MTR)
6 AN GND
5 D GND
4 D 6V
3 DC -30V
2 +F
1 -F
TO MA-246
BOARD(1/2)
CN104
SEE PAGE 4-13
02

no mark : Voltage are dc between measurement point and ground.

( ) : Voltage are dc between measurement point and ground of D101 (A point).

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

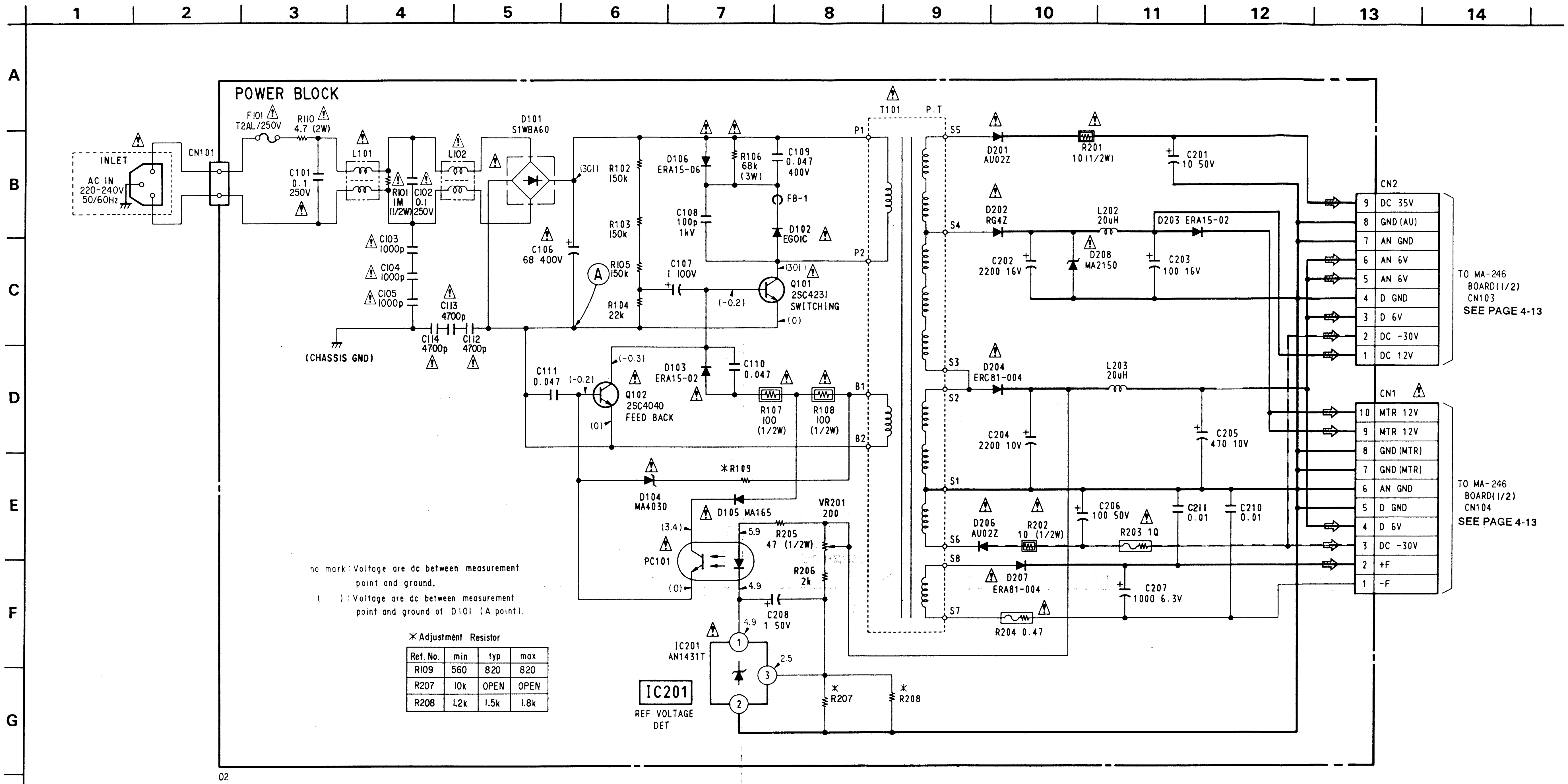
H

I

POWER BLOCK SCHEMATIC DIAGRAM

– Ref. No. POWER BLOCK : 5,000 Series –

(SVO-1500P)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A
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C
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E
F
G
H
POWER BLOCK
INLET
AC IN
220-240V
50/60Hz
CN101
F101
T2AL/250V
R110
4.7 (2W)
C101
0.1
250V
L101
R101
1M
(1/2W)
C102
0.1
250V
L102
D101
S1WBA60
C103
1000p
C104
1000p
C105
1000p
C113
4700p
C114
4700p
C112
4700p
(CHASSIS GND)
C106
68 400V
A
(301)
R102
150k
R103
150k
R105
150k
R104
22k
D106
ERA15-06
R106
68k
(3W)
C109
0.047
400V
C108
100p
1kV
FB-1
D102
EG01C
C107
1 100V
(-0.2)
(301)
Q101
2SC4231
SWITCHING
(0)
C111
0.047
(-0.2)
(-0.3)
Q102
2SC4040
FEED BACK
(0)
D103
ERA15-02
C110
0.047
R107
100
(1/2W)
R108
100
(1/2W)
D104
MA4030
*R109
D105 MA165
(3.4)
PC101
(0)
5.9
R205
47 (1/2W)
VR201
200
R206
2k
4.9
C208
1 50V
4.9
2.5
IC201
AN1431T
IC201
REF VOLTAGE
DET
*R207
*R208
T101
P.T
P1
P2
B1
B2
S5
S4
S3
S2
S1
S6
S8
S7
D201
AU02Z
R201
10 (1/2W)
C201
10 50V
D202
RG4Z
L202
20uH
D203 ERA15-02
D208
MA2150
C202
2200 16V
C203
100 16V
D204
ERC81-004
L203
20uH
C204
2200 10V
C205
470 10V
C206
100 50V
C211
0.01
C210
0.01
D206
AU02Z
R202
10 (1/2W)
R203 1Ω
D207
ERA81-004
C207
1000 6.3V
R204 0.47
CN2
9 DC 35V
8 GND (AU)
7 AN GND
6 AN 6V
5 AN 6V
4 D GND
3 D 6V
2 DC -30V
1 DC 12V
TO MA-246
BOARD (1/2)
CN103
SEE PAGE 4-13
CN1
10 MTR 12V
9 MTR 12V
8 GND (MTR)
7 GND (MTR)
6 AN GND
5 D GND
4 D 6V
3 DC -30V
2 +F
1 -F
TO MA-246
BOARD (1/2)
CN104
SEE PAGE 4-13
02

no mark : Voltage are dc between measurement point and ground.

( ) : Voltage are dc between measurement point and ground of D101 (A point).

✳ Adjustment Resistor

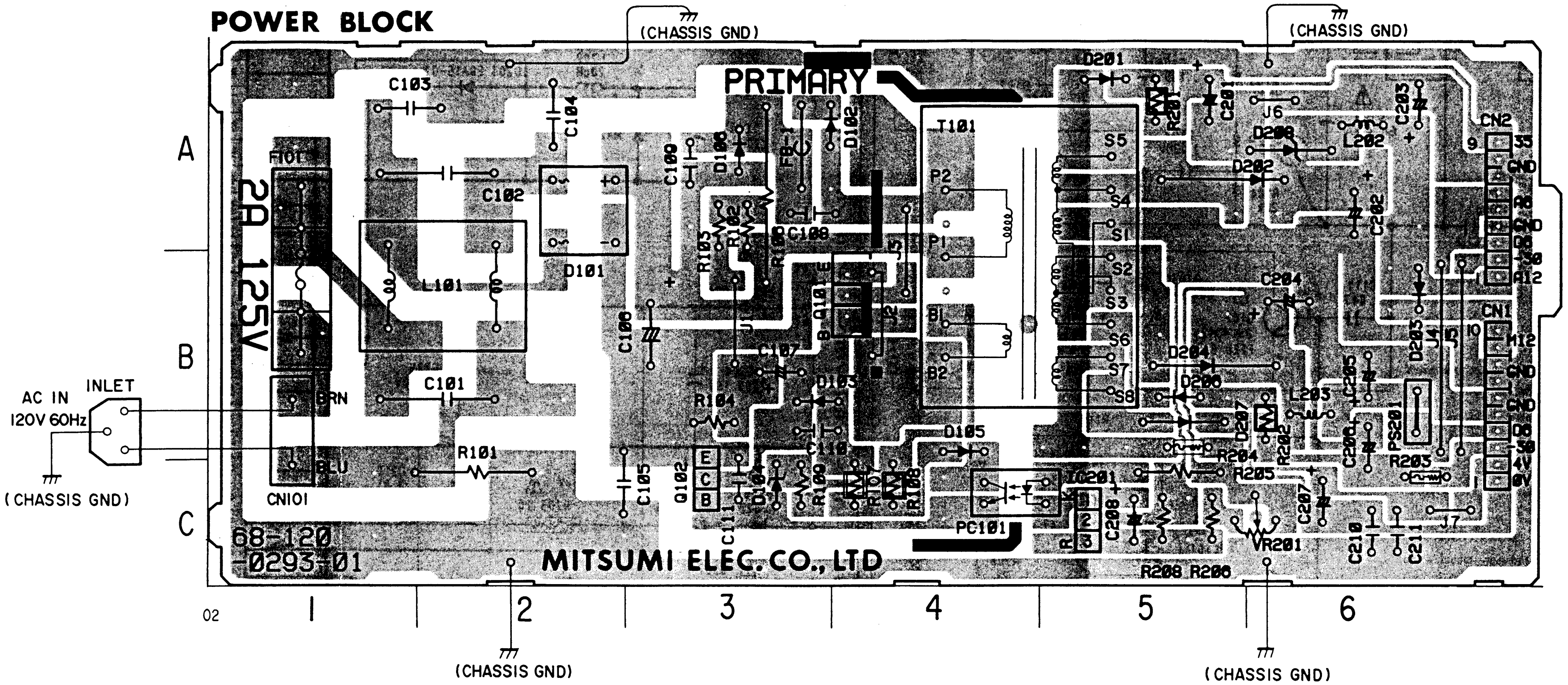
Ref. No.	min	typ	max
R109	560	820	820
R207	10k	OPEN	OPEN
R208	1.2k	1.5k	1.8k

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK PRINTED WIRING BOARD

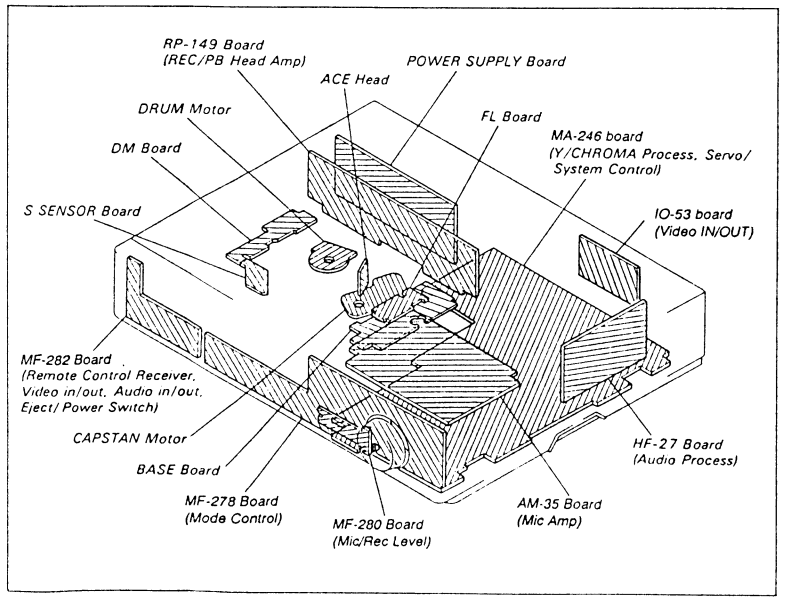
– Ref. No. POWER BLOCK : 5,000 Series –

(SVO-1500)

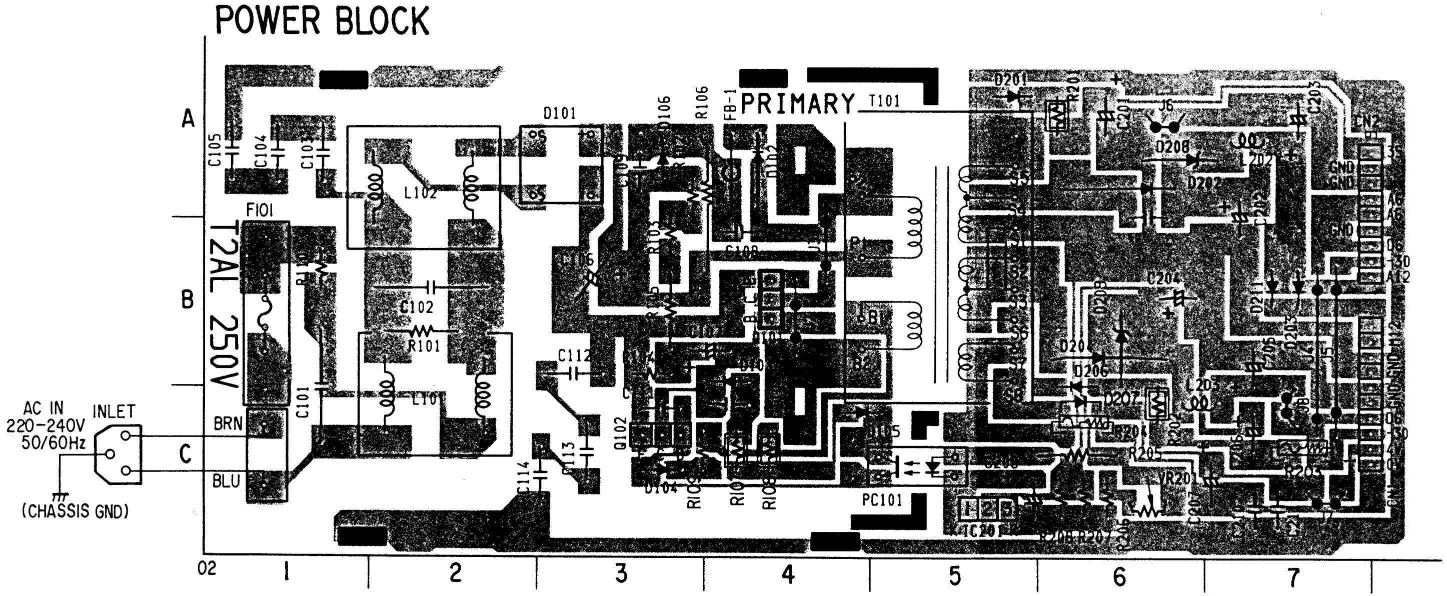

POWER BLOCK
(CHASSIS GND)
(CHASSIS GND)
PRIMARY
AC IN
120V 60Hz
INLET
BRN
BLU
CN101
(CHASSIS GND)
F101
2A 125V
C103
C104
C102
L101
D101
C101
R101
C105
Q102
E
C
B
C100
D106
D102
FB1
R105
R102
R106
C108
Q101
R104
C107
D103
D104
C110
D105
R107
R108
R109
C111
T101
P2
P1
B1
B2
S5
S4
S1
S2
S3
S6
S7
S8
IC201
PC101
C208
D201
R201
C201
J6
D208
L202
C203
D202
C202
C204
D204
D206
D207
R202
R204
R205
L203
C205
C206
PS201
R203
D205
C207
VR201
C210
C211
R208
R206
CN2
CN1
35
GND
A6
GND
D6
-30
A12
M12
GND
GND
D6
5B
4V
0V
68-120
0293-01
MITSUMI ELEC. CO., LTD
A
B
C
02
1
2
3
4
5
6

POWER BLOCK
BOARD

CN1	B-6
CN101	B-1
CN2	A-6
D101	A-1
D102	A-3
D103	B-3
D104	C-3
D105	B-4
D106	A-3
D201	A-5
D202	A-6
D203	B-6
D204	B-5
D206	B-5
D207	B-5
D208	A-6
IC201	C-5
Q101	B-4
Q102	C-3

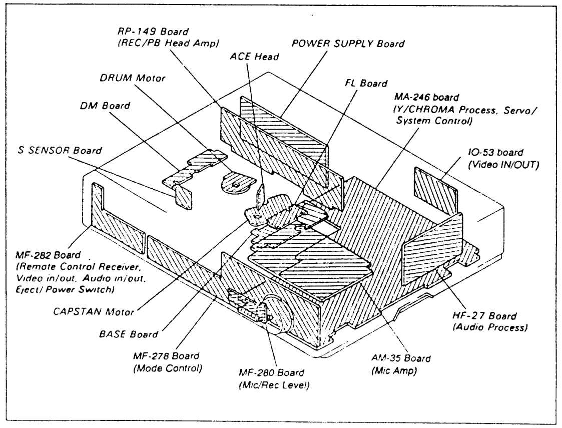

RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/Power Switch)
CAPSTAN Motor
BASE Board
HF-27 Board
(Audio Process)
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)

POWER BLOCK PRINTED WIRING BOARD
– Ref. No. POWER BLOCK : 5,000 Series – **(SVO-1500P)**


POWER BLOCK
AC IN
220-240V
50/60Hz
INLET
(CHASSIS GND)
BRN
BLU
F101
T2AL 250V
C105
C104
C103
L102
C102
R101
L101
C101
D101
D106
R106
FB-1
PRIMARY
T101
C112
C114
C113
Q102
D104
C108
C107
D105
PC101
D201
R201
C201
C203
J6
D208
D202
C202
C204
D203
D204
D206
D207
L203
R204
R205
VR201
R208
R207
IC201
CN2
GND
A
B
C
02
1
2
3
4
5
6
7

POWER BLOCK
BOARD

CN1	C - 7
CN101	C - 1
CN2	A - 7
D101	A - 3
D102	A - 4
D103	B - 4
D104	C - 3
D105	C - 4
D106	A - 3
D201	A - 5
D202	A - 6
D203	B - 7
D204	B - 6
D206	B - 6
D207	C - 6
D208	A - 6
IC201	C - 5
Q101	B - 4
Q102	C - 3


RP-149 Board
(REC/PB Head Amp)
POWER SUPPLY Board
ACE Head
DRUM Motor
FL Board
DM Board
MA-246 board
(Y/CHROMA Process, Servo/
System Control)
S SENSOR Board
IO-53 board
(Video IN/OUT)
MF-282 Board
(Remote Control Receiver,
Video in/out, Audio in/out,
Eject/ Power Switch)
CAPSTAN Motor
BASE Board
MF-278 Board
(Mode Control)
MF-280 Board
(Mic/Rec Level)
AM-35 Board
(Mic Amp)
HF-27 Board
(Audio Process)

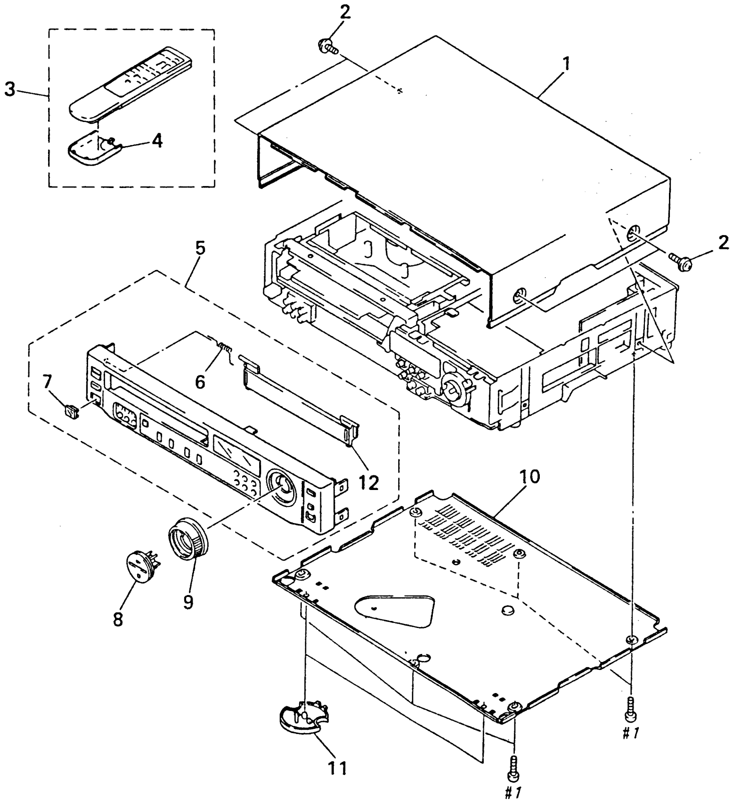
SECTION 5
EXPLODED VIEWS

NOTE :
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

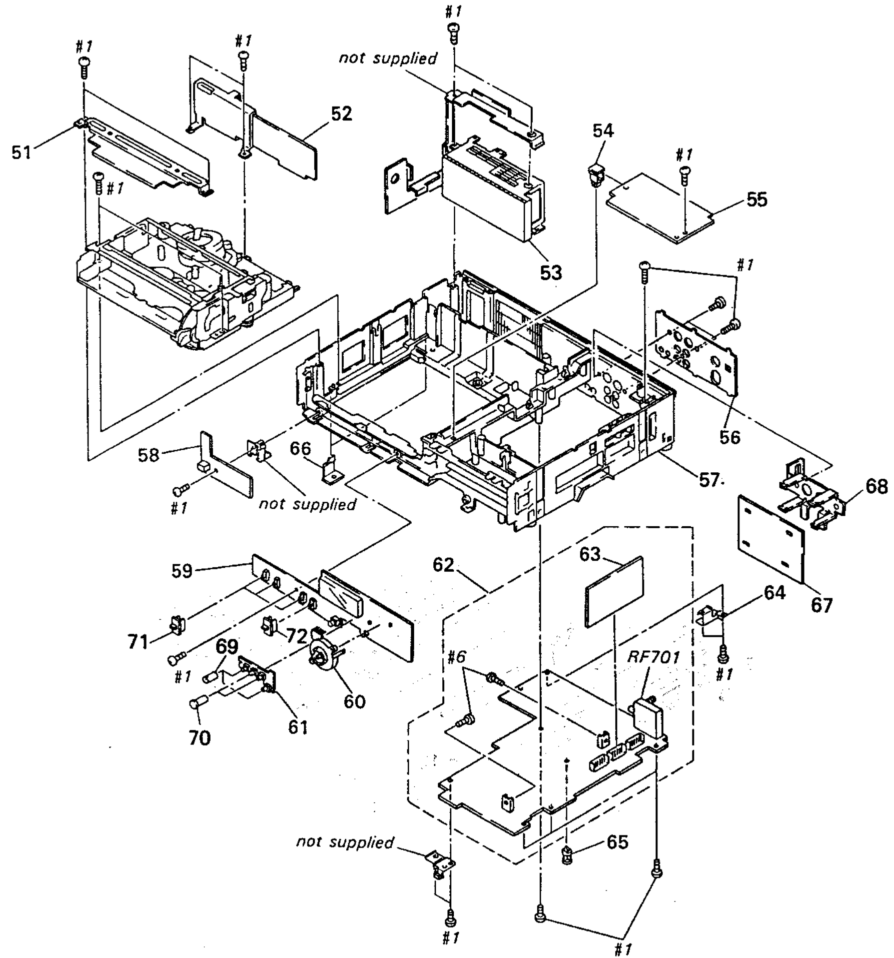
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT PANEL AND CABINET ASSEMBLYS



Ref. No.	Part No.	Description	Remark
* 1	3-952-960-21	COVER, UPPER (SVO-1500P)	
* 1	3-952-960-31	COVER, UPPER (SVO-1500)	
2	3-710-901-11	SCREW, TAPPING	
3	1-467-366-11	REMOTE CMMANDER (RMT-V139A) (SVO-1500)	
3	1-467-366-21	REMOTE CMMANDER (RMT-V139) (SVO-1500P)	
4	4-959-044-01	COVER, BATTERY (RMT-V139A) (SVO-1500)	
4	4-959-366-21	COVER, BATTERY (RMT-V139) (SVO-1500P)	
5	X-3945-131-1	PANEL ASSY, FRONT (SVO-1500P)	
5	X-3945-148-1	PANEL ASSY, FRONT (SVO-1500)	
6	3-950-962-01	SPRING, FL	
7	3-946-620-01	FILTER, REMOTE CONTROL	
8	X-3942-636-1	BUTTON ASSY, FUNCTION	
9	3-946-627-11	RING, SHUTTLE	
10	3-944-552-31	PLATE, BOTTOM	
11	3-946-783-31	INSULATOR (DIA. 58×5)	
12	3-955-887-71	DOOR, CASSETTE (SVO-1500)	
12	3-955-887-81	DOOR, CASSETTE (SVO-1500P)	

5-2. MAIN BOARDS ASSEMBLY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not supplied
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not supplied
68
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#1
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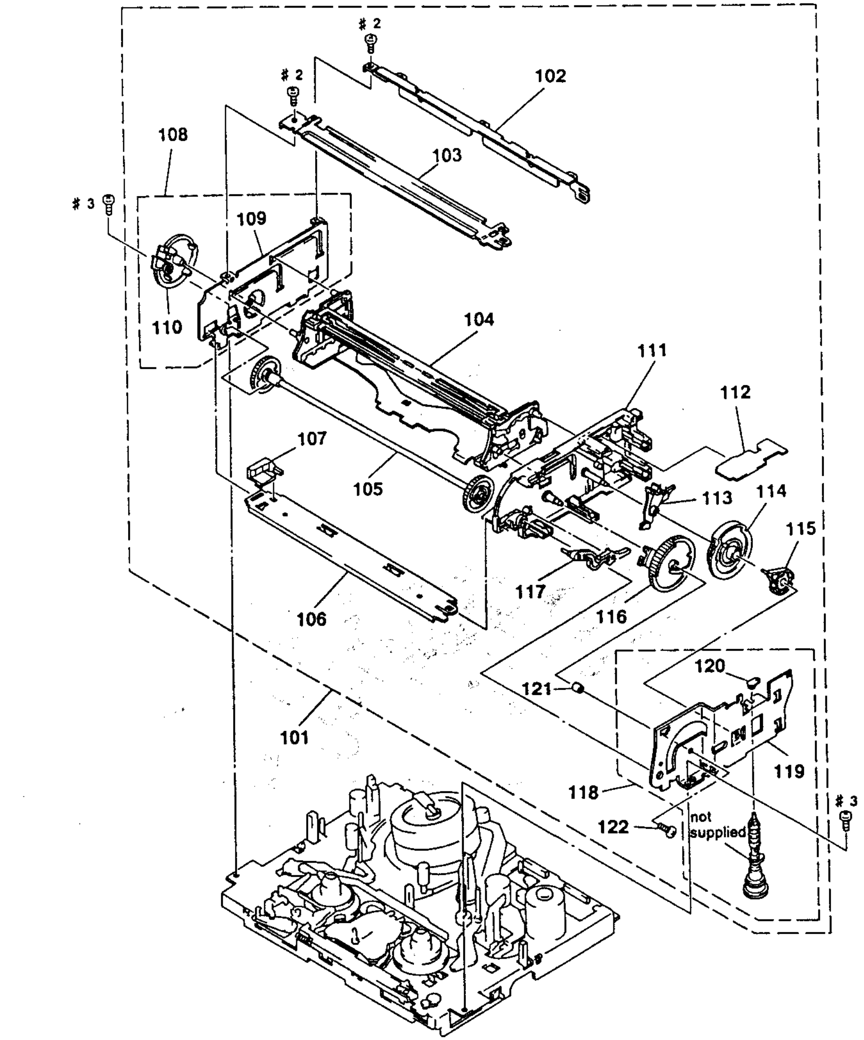
70
61
#6
RF701
#1
not supplied
65
#1
#1

Ref. No.	Part No.	Description	Remark
51	3-946-636-01	STAY, FL	
* 52	A-6727-509-A	RP-149 BOARD, COMPLETE (SVO-1500)	
* 52	A-6727-510-A	RP-149 BOARD, COMPLETE (SVO-1500P)	
⚠53	1-413-971-11	POWER BLOCK (SVO-1500)	
⚠53	1-473-343-11	POWER BLOCK (SVO-1500P)	
54	3-736-704-01	HINGE, PC BOARD	
* 55	A-6721-674-A	AM-35 BOARD, COMPLETE	
* 56	3-962-192-31	PLATE, JACK, REAR (SVO-1500P)	
* 56	3-962-192-41	PLATE, JACK, REAR (SVO-1500)	
* 57	3-952-951-31	CHASSIS, D-MOLD (SVO-1500)	
* 57	3-952-951-41	CHASSIS, D-MOLD (SVO-1500P)	
* 58	A-6721-673-A	MF-282 BOARD, COMPLETE	
* 59	A-6721-671-A	MF-278 BOARD, COMPLETE SVO-1500P)	
* 59	A-6721-675-A	MF-278 BOARD, COMPLETE (SVO-1500)	
60	1-572-662-11	SWITCH, ROTARY (SHUTTLE RING)	

Ref. No.	Part No.	Description	Remark
* 61	A-6721-672-A	MF-280 BOARD, COMPLETE	
* 62	A-6721-678-A	MA-246 BOARD, COMPLETE (SVO-1500)	
* 62	A-6782-599-A	MA-246 BOARD, COMPLETE (SVO-1500P)	
* 63	A-6713-512-A	HF-27 BOARD, COMPLETE (SVO-1500)	
* 63	A-6713-513-A	HF-27 BOARD, COMPLETE (SVO-1500P)	
* 64	3-741-962-11	PLATE, GROUND, JMP	
65	3-682-057-11	SPACER (SMALL)	
66	3-741-992-01	STOPPER (NEW), UPPER COVER	
* 67	A-6782-350-A	IO-53 BOARD, COMPLETE	
* 68	3-960-132-01	HOLDER, I/O	
69	3-964-250-01	KNOB (MIC), VOL	
70	3-952-553-01	KNOB, VOLUME	
71	3-955-856-01	KNOB, POWER SWITCH	
72	3-955-857-01	KNOB, TV/VTR SWITCH	
RF701	1-466-989-11	MODULATOR, RF (SVO-1500)	

5-3. FL CASSETTE COMPARTMENT ASSEMBLY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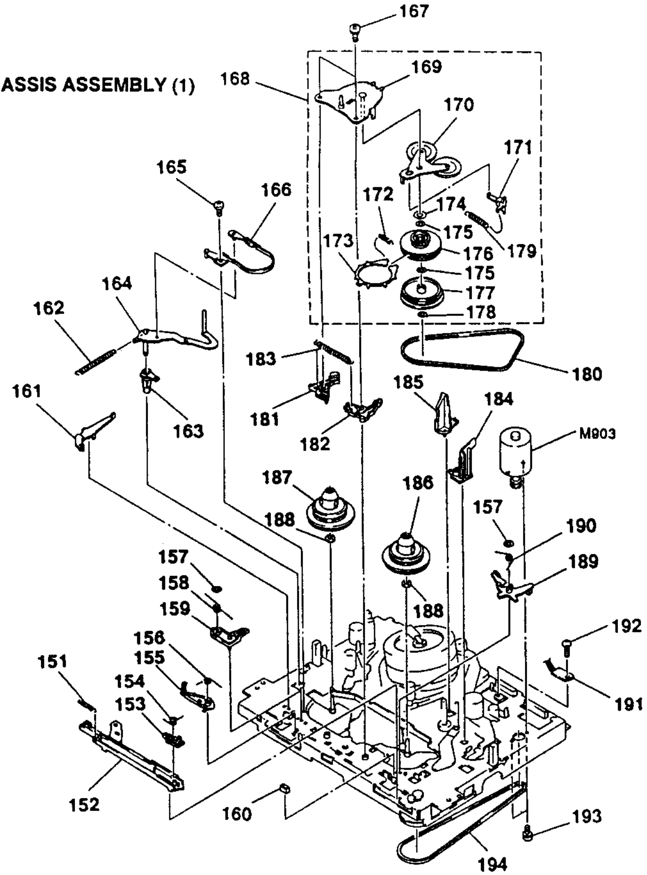
not supplied

Ref. No.	Part No.	Description	Remark
101	3-946-965-01	FL ASSY	
102	3-947-008-01	ANGLE, REAR	
103	3-946-995-01	PLATE, UPPER	
104	3-946-979-01	HOLDER ASSY, CASSETTE	
105	3-946-983-01	GEAR ASSY, SYNCHRO	
106	3-946-993-01	ANGLE, FRONT	
107	3-946-994-01	GUIDE (L), CASSETTE	
108	3-946-978-01	FRAME (L) ASSY	
109	3-947-009-01	RIVETING, FRAME (L)	
110	3-947-010-01	GEAR (L) ASSY, LIFT	
111	3-947-011-01	FRAME (R)	

Ref. No.	Part No.	Description	Remark
112	3-946-992-01	PWB (B) ASSY, FL	
113	3-946-991-01	LEVER ASSY, SWITCH	
114	3-946-980-01	WHEEL ASSY, WORM	
115	3-946-981-01	ARM ASSY, SWITCH	
116	3-946-982-01	GEAR (R) ASSY, LIFT	
117	3-947-012-01	LEVER ASSY, LIFT	
118	3-946-990-01	COVER ASSY, FRAME	
119	3-947-013-01	COVER, FRAME	
120	3-947-020-01	BEARING (A), F WORM	
121	3-948-705-01	COLLAR	
122	3-948-706-01	SCREW (3×6)	

5-4. MECHANISM CHASSIS ASSEMBLY (1)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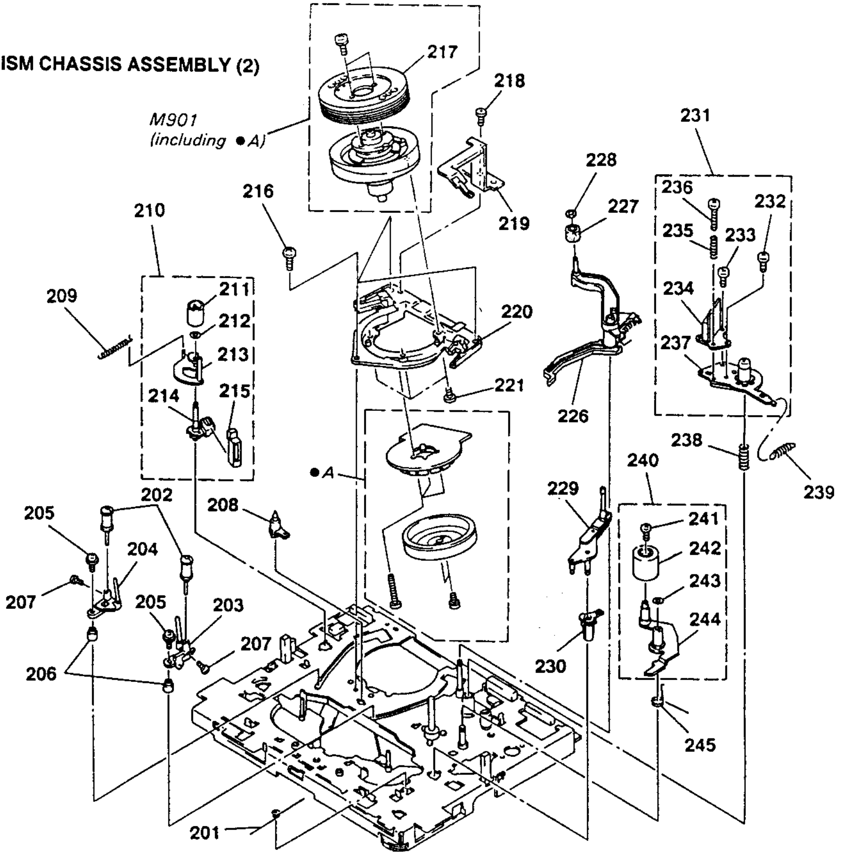
Ref. No.	Part No.	Description	Remark
151	3-947-015-01	SPRING, BK SLIDE	
152	3-947-001-01	PLATE, SLIDE, BK	
153	3-947-014-01	HOOK, BK TRIGGER	
154	3-947-016-01	SPRING, TRIGGER HOOK	
155	3-946-959-01	ARM, REC	
156	3-946-947-01	SPRING, REC ARM	
157	3-946-916-01	CUT (3×6×0.5), HLW	
158	3-946-915-01	SPRING, SS ARM	
159	3-946-914-01	ARM, SS BRAKE	
160	3-947-067-01	RUBBER, DAMPER	
161	3-946-946-01	ARM, REC SWITCH	
162	3-946-937-01	SPRING, BT	
163	3-946-936-01	METAL, BT ARM	
164	3-946-934-01	ARM ASSY, TENSION	
165	3-946-966-01	SCREW (2.6×5), +C TIGHT	
166	3-946-935-01	BAND ASSY, BT	
167	3-947-000-01	SCREW (2×4), +	
168	3-951-590-01	PLATE ASSY, SUB	
169	3-952-168-01	RIVETING, SUB PLATE	
170	3-946-988-01	PLATE ASSY, GEAR	
171	3-946-987-01	ARM, CENTER RING	
172	3-946-986-01	SPRING, CHANGE RING	
173	3-946-985-01	RING, CHANGE	
174	3-946-989-01	HL (W) (C) (6.4×9×0.3)	
175	3-946-997-01	HL (W) (2.5×4.5×0.25)	
176	3-951-591-01	CLUTCH ASSY	
177	3-946-984-01	PULLEY ASSY, CLUTCH	
178	3-946-996-01	CUT (2.1×5×0.3), P.W.	
179	3-947-998-01	SPRING, CENTER RING ARM	
180	3-946-999-01	BELT, DRIVE	
181	3-947-017-01	ARM (L) ASSY, BRAKE	
182	3-947-018-01	ARM (R) ASSY, BRAKE	
183	3-947-019-01	SPRING, BRAKE ARM	
184	3-947-069-01	GUIDE BLOCK	
185	3-947-068-01	GUIDE ASSY, TAPE	
186	3-947-002-01	TABLE ASSY, REEL	
187	3-947-997-01	TABLE ASSY, S REEL	
188	3-947-003-01	WASHER (2.5×4.5×0.5)	
189	3-946-912-01	ARM ASSY, TS BRAKE	
190	3-946-913-01	SPRING, TS ARM	
191	3-947-626-01	SENSOR (EYH-S10R) (SVO-1500)	
192	3-947-996-01	SCREW (1.55×4.5×0.3)	
193	3-946-918-01	SCREW (3×4)	
194	3-946-923-01	BELT, LOADING	
M903	3-946-917-01	MOTOR ASSY, L (LOADING)	

5-5. MECHANISM CHASSIS ASSEMBLY (2)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M901
(including ●A)
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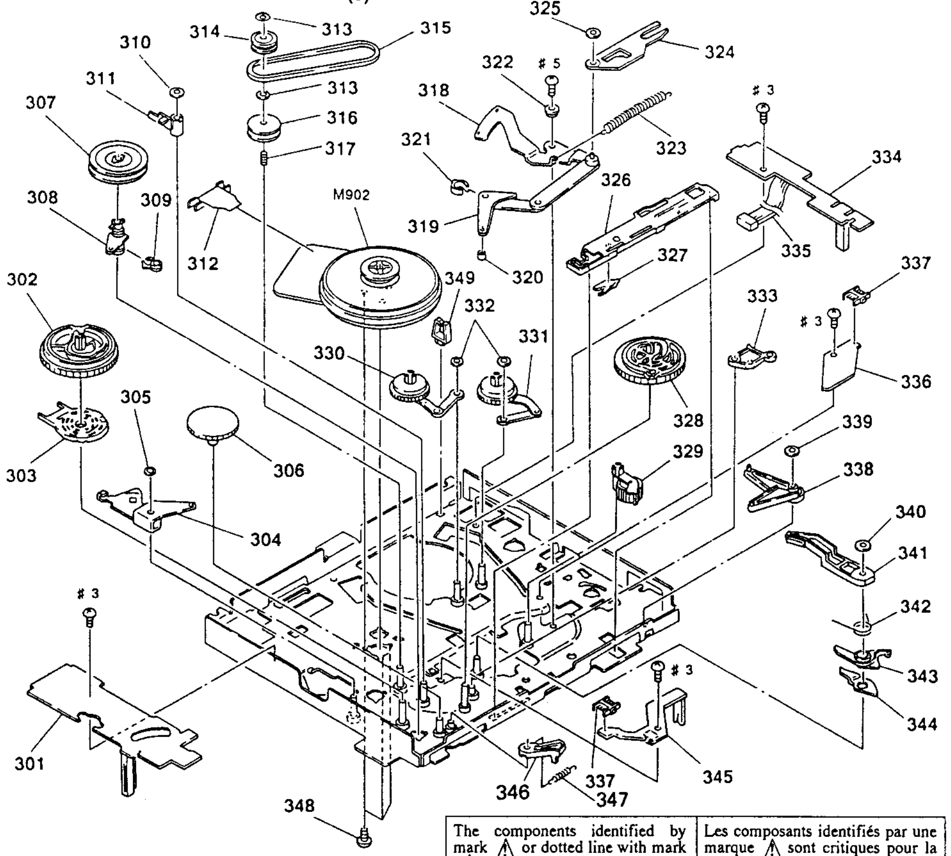
201

Ref. No.	Part No.	Description	Remark
201	3-947-022-01	SPRING, RG ARM	
202	3-947-073-01	POST, ROLLER	
203	3-947-072-01	L BLOCK (R) ASSY	
204	3-947-071-01	L BLOCK (L) ASSY	
205	3-947-078-01	SCREW (2.6×3), + CUP	
206	3-947-077-01	BOSS, LOADING	
207	3-947-074-01	SCREW (2×2.3)	
208	3-947-070-01	BOSS, CASSETTE GUIDE	
209	3-948-474-01	SPRING, F POST	
210	3-946-972-01	FE (BASE) ASSY	
211	3-946-975-01	ROLLER, IMPEDANCE	
212	3-946-977-01	CUT (1.6×3.8×0.3), W	
213	3-946-976-01	ARM ASSY, F POST	
214	3-946-974-01	HEAD (HVFHG0003), FE	
215	3-946-973-01	HEAD (HV113001), FE	
216	3-947-066-01	SCREW (3×7), +C TIGHT	
217	8-848-555-01	DRUM ASSY DZR-37-R (SVO-1500)	
217	8-848-622-01	DRUM ASSY DZR-66-R (SVO-1500P)	
218	3-949-182-01	SCREW (2.6×5), +C TIGHT	
219	3-949-180-01	GROUND ASSY, SD	
220	3-949-179-01	SD (BASE) ASSY	
221	3-949-181-01	SCREW (3×8), + PAN	
226	3-947-080-01	LEVER ASSY, CLEANING	
227	3-947-624-01	ROLLER, CLEANING	
228	3-947-625-01	CUT(2.1×5×0.3), POLY-SLIDER(W)	
229	3-947-021-01	ARM ASSY, RG	
230	3-946-936-01	METAL, BT ARM	
231	3-947-081-01	AH (BASE) ASSY	
232	3-946-929-01	SCREW (2.6×8), PAN	
233	3-946-930-01	SCREW (2.6×7), + PAN	
234	3-947-082-01	HEAD (HVMZA1136), ACE	
235	3-947-083-01	SP, AZIMUTH	
236	3-946-928-01	SCREW, AZIMUTU SP	
237	3-946-931-01	HOLDER ASSY, AH (BASE)	
238	3-946-933-01	SPRING, AH (BASE)	
239	3-946-932-01	SPRING, X ADJ	
240	3-947-004-01	ARM ASSY, P ROLLER	
241	3-947-007-01	SCREW (2.6×4), + BIND	
242	3-947-005-01	PINCH ROLLER	
243	3-947-024-01	HL (C) (3.5×5.5×0.5)	
244	3-947-006-01	RIVETING, P ROLLER ARM	
245	3-947-025-01	SPRING, P ARM	
M901	A-6709-721-A	DRUM ASSY DZH-58A(K)-R (SVO-1500)	
M901	8-848-619-11	DRUM ASSY DZH-66A-R (SVO-1500P)	

5-6. MECHANISM CHASSIS ASSEMBLY (3)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
301	3-946-954-01	PWB ASSY, BASE	
302	3-951-592-01	GEAR, P CAM	
303	3-946-958-01	SWITCH, MODE	
304	3-947-026-01	PLATE ASSY	
305	3-947-027-01	CUT (3×6×0.5), POLY-SLIDER (W)	
306	3-946-922-01	GEAR, LOADING	
307	3-946-921-01	PULLEY, LOADING	
308	3-946-919-01	METAL ASSY, L PULLEY	
309	3-946-920-01	ARM ASSY, TRG GEAR	
310	3-946-964-01	CUT (2.1×5×0.5)	
311	3-946-961-01	ARM, BREAKER	
312	3-947-029-01	LEAD ASSY, CM	
313	3-946-963-01	CUT (2.1×4×0.4)	
314	3-946-950-01	PULLEY ASSY, RE	
315	3-946-962-01	BELT, FL	
316	3-946-951-01	PULLEY, EJECT	
317	3-946-960-01	SPRING, BREAKER	
318	3-946-926-01	RIVETING, L JOINT PLATE	
319	3-946-952-01	STOPPER, GEAR PLATE	
320	3-946-941-01	ROLLER, CAM	
321	3-946-945-01	STOPPER, L LEVER	
322	3-946-940-01	COLLAR, L GEAR PLATE	
323	3-946-927-01	SPRING, L GR PLATE	
324	3-946-939-01	PLATE, UP, BT PULL	
325	3-946-967-01	CUT (2.1×4×0.5)	

Ref. No.	Part No.	Description	Remark
326	3-946-943-01	PLATE, SLIDE, M	
327	3-946-944-01	LEVER	
328	3-946-925-01	GEAR, L CAM	
329	3-946-998-01	ARM ASSY, RF GEAR	
330	3-947-075-01	GEAR (L) ASSY, T THREADING	
331	3-947-076-01	GEAR (R) ASSY, T THREADING	
332	3-947-079-01	HL (C) (4.7×7×0.5)	
333	3-946-942-01	LEVER, M	
334	3-949-184-01	PWB (B) ASSY, DM	
335	3-949-190-01	WIRE ASSY, DM	
336	3-946-956-01	PWB ASSY, S SENSOR	
337	3-946-948-01	JOINER (MCN40011), PWB	
338	3-946-938-01	LEVER, BT	
339	3-946-968-01	CUT (3×7.5×0.5), HLW	
340	3-947-035-01	CUT (2.6×6×0.5)	
341	3-947-033-01	LEVER, CB RETURN	
342	3-947-031-01	SPRING, C BRAKE	
343	3-947-032-01	LEVER, C BRAKE	
344	3-947-030-01	ARM ASSY, C BRAKE	
345	3-946-955-01	PWB ASSY, T SENSOR	
346	3-946-910-01	ARM, BK RELEASE	
347	3-946-911-01	SPRING, RESET	
348	3-947-034-01	SCREW (2.6×7), + C TIGHT	
349	3-949-185-01	SADDLE, MINIATURE	
⚠M902	3-947-028-01	MOTOR (CAPSTAN)	

SECTION 6
ELECTRICAL PARTS LIST

AM-35

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6721-674-A	AM-35 BOARD, COMPLETE **********************			
		(Ref. No. 1,000 Series)			
		< CAPACITOR >			
C101	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C104	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C105	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C111	1-124-925-11	ELECT	2.2uF	20%	100V
C112	1-124-925-11	ELECT	2.2uF	20%	100V
C113	1-126-963-11	ELECT	4.7uF	20%	50V
C114	1-124-925-11	ELECT	2.2uF	20%	100V
C115	1-124-925-11	ELECT	2.2uF	20%	100V
C116	1-124-907-11	ELECT	10uF	20%	50V
C117	1-124-907-11	ELECT	10uF	20%	50V
C118	1-126-963-11	ELECT	4.7uF	20%	50V
C119	1-126-963-11	ELECT	4.7uF	20%	50V
C120	1-126-963-11	ELECT	4.7uF	20%	50V
C121	1-124-907-11	ELECT	10uF	20%	50V
C122	1-126-963-11	ELECT	4.7uF	20%	50V
C123	1-124-907-11	ELECT	10uF	20%	50V
C130	1-124-916-11	ELECT	22uF	20%	63V
C132	1-124-916-11	ELECT	22uF	20%	63V
C133	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C134	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C135	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C136	1-124-916-11	ELECT	22uF	20%	63V
C201	1-124-907-11	ELECT	10uF	20%	50V
C202	1-124-916-11	ELECT	22uF	20%	63V
C203	1-124-916-11	ELECT	22uF	20%	63V
C205	1-124-907-11	ELECT	10uF	20%	50V
C206	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C207	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C208	1-124-916-11	ELECT	22uF	20%	63V
C211	1-124-907-11	ELECT	10uF	20%	50V

Ref. No.	Part No.	Description			Remark
C301	1-124-916-11	ELECT	22uF	20%	63V
C302	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C303	1-124-925-11	ELECT	2.2uF	20%	100V
		< CONNECTOR >			
CN101	1-506-473-11	PIN, CONNECTOR 8P			
CN102	1-506-469-11	PIN, CONNECTOR 4P			
CN103	1-506-473-11	PIN, CONNECTOR 8P			
CN104	1-506-474-11	PIN, CONNECTOR 9P			
CN105	1-563-583-11	CONNECTOR, FLEXIBLE 6P			
		< DIODE >			
D201	8-719-923-78	DIODE MTZJ-T-77-12			
D301	8-719-991-33	DIODE 1SS133T-77			
D302	8-719-991-33	DIODE 1SS133T-77			
D401	8-719-200-82	DIODE 11ES2			
		< FILTER >			
FL401	1-236-163-41	ENCAPSULATED COMPONENT (EMI FILTER)			
FL402	1-236-163-41	ENCAPSULATED COMPONENT (EMI FILTER)			
		< IC >			
IC101	8-759-981-44	IC BA15218F-K			
IC102	8-759-981-44	IC BA15218F-K			
IC103	8-759-981-44	IC BA15218F-K			
		< JUMPER RESISTOR >			
JR301	1-216-295-91	CONDUCTOR, CHIP (2012)			
		< COIL >			
L301	1-408-397-00	INDUCTOR 1uH			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q101	8-729-422-29	TRANSISTOR	2SD601A-S		
Q102	8-729-422-29	TRANSISTOR	2SD601A-S		
Q201	8-729-141-83	TRANSISTOR	2SA473		
Q202	8-729-901-04	TRANSISTOR	DTA114EK		
Q203	8-729-901-01	TRANSISTOR	DTC144EK		
Q204	8-729-800-37	TRANSISTOR	2SD1048-X7		
Q205	8-729-800-37	TRANSISTOR	2SD1048-X7		
Q301	8-729-901-06	TRANSISTOR	DTA144EK		
Q302	8-729-901-01	TRANSISTOR	DTC144EK		
Q303	8-729-901-01	TRANSISTOR	DTC144EK		
Q304	8-729-901-01	TRANSISTOR	DTC144EK		
Q305	8-729-422-29	TRANSISTOR	2SD601A-S		
Q306	8-729-422-29	TRANSISTOR	2SD601A-S		
Q307	8-729-216-22	TRANSISTOR	2SA1162		
		< RESISTOR >			
R101	1-216-073-00	METAL CHIP	10K	5%	1/10W
R102	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R103	1-216-091-00	METAL CHIP	56K	5%	1/10W
R104	1-216-096-00	METAL GLAZE	91K	5%	1/10W
R105	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-249-437-11	CARBON	47K	5%	1/4W
R108	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R109	1-216-080-00	METAL CHIP	20K	5%	1/10W
R110	1-216-080-00	METAL CHIP	20K	5%	1/10W
R111	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R112	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R113	1-216-075-00	METAL CHIP	5.1K	5%	1/10W
R114	1-216-075-00	METAL CHIP	5.1K	5%	1/10W
R115	1-216-075-00	METAL CHIP	5.1K	5%	1/10W
R117	1-216-033-00	METAL CHIP	220	5%	1/10W
R118	1-216-033-00	METAL CHIP	220	5%	1/10W
R190	1-216-073-00	METAL CHIP	10K	5%	1/10W
R191	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R192	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R193	1-216-073-00	METAL CHIP	10K	5%	1/10W
R194	1-216-073-00	METAL CHIP	10K	5%	1/10W
R195	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R196	1-216-073-00	METAL CHIP	10K	5%	1/10W
R197	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R198	1-216-073-00	METAL CHIP	10K	5%	1/10W
R199	1-216-073-00	METAL CHIP	10K	5%	1/10W
R200	1-216-073-00	METAL CHIP	10K	5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R204	1-216-081-00	METAL CHIP	22K	5%	1/10W
R205	1-216-081-00	METAL CHIP	22K	5%	1/10W
R206	1-216-095-00	METAL CHIP	82K	5%	1/10W
R207	1-216-081-00	METAL CHIP	22K	5%	1/10W
R208	1-216-095-00	METAL CHIP	82K	5%	1/10W
R209	1-216-045-00	METAL CHIP	680	5%	1/10W
R210	1-216-081-00	METAL CHIP	22K	5%	1/10W
R211	1-216-081-00	METAL CHIP	22K	5%	1/10W
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R301	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R302	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R303	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R304	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R306	1-216-109-00	METAL CHIP	330K	5%	1/10W
R307	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R310	1-216-025-91	METAL GLAZE	100	5%	1/10W
R311	1-216-081-00	METAL CHIP	22K	5%	1/10W
R401	1-249-429-11	CARBON	10K	5%	1/4W
R995	1-216-073-00	METAL CHIP	10K	5%	1/10W
R996	1-216-073-00	METAL CHIP	10K	5%	1/10W
R997	1-249-393-11	CARBON	10	5%	1/4W
R998	1-249-393-11	CARBON	10	5%	1/4W

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* A-6713-512-A HF-27 BOARD, COMPLETE (SVO-1500)
* A-6713-513-A HF-27 BOARD, COMPLETE (SVO-1500P)
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(Ref. No. 2,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C201	1-126-962-11	ELECT	3.3uF	20%	50V
C202	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C203	1-126-233-11	ELECT	22uF	20%	50V
C204	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C205	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C206	1-130-477-00	MYLAR	0.0033uF	5%	50V
C207	1-130-483-00	MYLAR	0.01uF	5%	50V
C208	1-104-664-11	ELECT	47uF	20%	16V
C209	1-130-487-00	MYLAR	0.022uF	5%	50V
C210	1-126-963-11	ELECT	4.7uF	20%	50V
C211	1-124-907-11	ELECT	10uF	20%	50V
C212	1-126-233-11	ELECT	22uF	20%	50V
C213	1-104-664-11	ELECT	47uF	20%	16V
C214	1-124-903-11	ELECT	1uF	20%	50V
C215	1-124-907-11	ELECT	10uF	20%	50V
C216	1-130-483-00	MYLAR	0.01uF	5%	50V
C218	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V (SVO-1500)
C218	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V (SVO-1500P)
C219	1-164-695-11	CERAMIC CHIP	0.0022uF	5%	50V (SVO-1500)
C220	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C221	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V (SVO-1500P)
C223	1-126-962-11	ELECT	3.3uF	20%	50V
C224	1-126-962-11	ELECT	3.3uF	20%	50V
C225	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C227	1-130-471-00	MYLAR	0.001uF	5%	50V
C228	1-124-903-11	ELECT	1uF	20%	50V
C229	1-104-665-11	ELECT	100uF	20%	16V
C230	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C231	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C232	1-126-962-11	ELECT	3.3uF	20%	50V
C233	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C234	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C235	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C236	1-130-477-00	MYLAR	0.0033uF	5%	50V
C237	1-130-483-00	MYLAR	0.01uF	5%	50V
C238	1-104-664-11	ELECT	47uF	20%	16V
C239	1-130-487-00	MYLAR	0.022uF	5%	50V
C240	1-126-963-11	ELECT	4.7uF	20%	50V
C241	1-124-261-00	ELECT	10uF	20%	50V
C243	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C244	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C245	1-104-665-11	ELECT	100uF	20%	16V
C246	1-104-663-11	ELECT	33uF	20%	16V
C247	1-104-663-11	ELECT	33uF	20%	16V
C248	1-104-665-11	ELECT	100uF	20%	16V
C249	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C250	1-104-664-11	ELECT	47uF	20%	16V
C251	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C252	1-126-233-11	ELECT	22uF	20%	50V
C253	1-126-962-11	ELECT	3.3uF	20%	50V (SVO-1500P)
C221	1-164-345-11	CERAMIC CHIP	0.082uF	10%	25V (SVO-1500)
		< CONNECTOR >			
CN201	1-750-153-11	CONNECTOR, BOARD TO BOARD 18P			
CN202	1-750-153-11	CONNECTOR, BOARD TO BOARD 18P			
CN203	1-750-153-11	CONNECTOR, BOARD TO BOARD 18P			
		< DIODE >			
D201	8-719-044-76	DIODE	1SS356-TW11		
D202	8-719-044-76	DIODE	1SS356-TW11		
D203	8-719-914-43	DIODE	DAN202K-T-146		
D204	8-719-044-76	DIODE	1SS356-TW11		(SVO-1500)
		< IC >			
IC201	8-759-160-54	IC	XLH7772KS-VP		
IC204	8-759-089-84	IC	BA7755AF-T1		
		< COIL >			
L201	1-410-071-11	INDUCTOR 10mH			
		< TRANSISTOR >			
⚠Q201	8-729-808-01	TRANSISTOR	2SD1622-S		
⚠Q202	8-729-018-61	TRANSISTOR	TRONSISTOR 2SB889F		
Q203	8-729-901-06	TRANSISTOR	DTA144EK		(SVO-1500P)
Q205	8-729-901-01	TRANSISTOR	DTC144EK		(SVO-1500P)
Q206	8-729-901-06	TRANSISTOR	DTA144EK		(SVO-1500P)
Q208	8-729-901-01	TRANSISTOR	DTC144EK		
		< RESISTOR >			
R201	1-208-808-11	METAL GLAZE	12K	0.50%	1/10W
R202	1-216-083-00	METAL CHIP	27K	5%	1/10W
R203	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R204	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R205	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R206	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W (SVO-1500P)
R206	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (SVO-1500)
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-035-00	METAL CHIP	270	5%	1/10W
R209	1-216-109-00	METAL CHIP	330K	5%	1/10W
R210	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (SVO-1500)
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W (SVO-1500P)
R211	1-216-037-00	METAL CHIP	330	5%	1/10W
R212	1-216-035-00	METAL CHIP	270	5%	1/10W
R213	1-216-083-00	METAL CHIP	27K	5%	1/10W
R215	1-216-045-00	METAL CHIP	680	5%	1/10W
R216	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (SVO-1500P)
R216	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (SVO-1500)
R217	1-216-095-00	METAL CHIP	82K	5%	1/10W
R218	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R219	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R220	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R221	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R223	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R227	1-216-085-00	METAL CHIP	33K	5%	1/10W
R228	1-216-295-91	CONDUCTOR, CHIP (2012)			
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
R231	1-216-049-91	METAL GLAZE	1K	5%	1/10W (SVO-1500)
R231	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SVO-1500P)
R232	1-216-085-00	METAL CHIP	33K	5%	1/10W

When indicating parts by reference number, please include the board.

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R234	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R235	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R236	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R237	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R238	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	(SVO-1500)
R238	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SVO-1500P)
R239	1-208-811-11	METAL GLAZE 16K 0.50% 1/10W	
R240	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R241	1-216-105-91	METAL GLAZE 220K 5% 1/10W	
R243	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R244	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R245	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R246	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R247	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R248	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R249	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R250	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R253	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R254	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R255	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R261	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	
R267	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R268	1-216-109-00	METAL CHIP 330K 5% 1/10W	(SVO-1500)
R269	1-216-295-91	CONDUCTOR, CHIP (2012)	
R270	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R271	1-216-295-91	CONDUCTOR, CHIP (2012)	
R297	1-216-099-00	METAL CHIP 120K 5% 1/10W	(SVO-1500P)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV201	1-241-885-11	RES, ADJ, CERMET 470K (VCO fo 1.8MHz(R))	(SVO-1500P)
RV202	1-241-763-11	RES, ADJ, CERMET 4.7K (VCO fo 1.7MHz(R))	(SVO-1500P)
RV203	1-241-765-11	RES, ADJ, CARBON 22K (AFM DEVIATION(R))	
RV204	1-241-764-11	RES, ADJ, CERMET 10K (BPF fo)	
RV205	1-241-885-11	RES, ADJ, CERMET 470K (VCO fo 1.4MHz(L))	(SVO-1500P)
RV206	1-241-763-11	RES, ADJ, CERMET 4.7K (VCO fo 1.3MHz(L))	
RV207	1-241-765-11	RES, ADJ, CARBON 22K (AFM DEVIATION(L))	

* A-6782-350-A IO-53 BOARD, COMPLETE

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(Ref. No. 1,000 Series)

< JACK >

Ref. No.	Part No.	Description	Remark
BNJ001	1-562-227-21	RECEPTACLE, BNC (VIDEO OUT)	
BNJ002	1-562-227-21	RECEPTACLE, BNC (VIDEO IN)	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN091	1-506-483-21	PIN, CONNECTOR 4P	

* A-6782-599-A MA-246 BOARD, COMPLETE (SVO-1500P)

* A-6721-678-A MA-246 BOARD, COMPLETE (SVO-1500)

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(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C102	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	
C103	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C104	1-163-129-00	CERAMIC CHIP 330PF 5% 50V	
C105	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	(SVO-1500P)
C106	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C107	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C108	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C109	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C110	1-104-664-11	ELECT 47uF 20% 10V	
C111	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C112	1-124-907-11	ELECT 10uF 20% 50V	
C113	1-124-907-11	ELECT 10uF 20% 50V	
C114	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C115	1-124-907-11	ELECT 10uF 20% 50V	
C117	1-104-664-11	ELECT 47uF 20% 10V	
C118	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C119	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C120	1-124-903-11	ELECT 1uF 20% 50V	
C121	1-124-903-11	ELECT 1uF 20% 50V	
C122	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C123	1-163-033-91	CERAMIC CHIP 0.022uF 50V	
C125	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	(SVO-1500P)
C125	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	(SVO-1500)
C130	1-163-104-00	CERAMIC CHIP 30PF 5% 50V	(SVO-1500P)
C130	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	(SVO-1500)
C131	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	(SVO-1500P)
C131	1-163-114-00	CERAMIC CHIP 75PF 5% 50V	(SVO-1500)
C132	1-107-713-11	ELECT 4.7uF 20% 35V	(SVO-1500P)
C132	1-109-889-11	ELECT 1uF 20% 50V	(SVO-1500)
C133	1-163-139-00	CERAMIC CHIP 820PF 5% 50V	
C134	1-163-088-00	CERAMIC CHIP 5PF 50V	
C135	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	
C136	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	
C137	1-124-907-11	ELECT 10uF 20% 50V	
C138	1-124-907-11	ELECT 10uF 20% 50V	
C139	1-163-033-91	CERAMIC CHIP 0.022uF 50V	
C140	1-124-252-00	ELECT 0.33uF 20% 50V	
C141	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	(SVO-1500P)
C141	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	(SVO-1500)
C142	1-163-033-91	CERAMIC CHIP 0.022uF 50V	

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
C143	1-124-903-11	ELECT 1uF 20% 50V	
C144	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C145	1-124-903-11	ELECT 1uF 20% 50V	
C147	1-163-033-91	CERAMIC CHIP 0.022uF 50V	
C148	1-163-178-11	CERAMIC CHIP 75PF 5% 50V	(SVO-1500P)
C148	1-163-184-00	CERAMIC CHIP 130PF 5% 50V	(SVO-1500)
C149	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C150	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	
C151	1-124-903-11	ELECT 1uF 20% 50V	
C153	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500)
C157	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	(SVO-1500P)
C157	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	(SVO-1500)
C158	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C159	1-104-664-11	ELECT 47uF 20% 10V	
C160	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C162	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C163	1-163-127-00	CERAMIC CHIP 270PF 5% 50V	
C164	1-163-119-00	CERAMIC CHIP 120PF 5% 50V	
C165	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	
C166	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C167	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	(SVO-1500P)
C168	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C169	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C170	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	(SVO-1500P)
C171	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C172	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	(SVO-1500P)
C173	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	(SVO-1500P)
C174	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C177	1-164-182-11	CERAMIC CHIP 0.0033uF 10% 50V	(SVO-1500P)
C178	1-130-477-00	MYLAR 0.0033uF 5% 50V	(SVO-1500P)
C179	1-124-463-00	ELECT 0.1uF 20% 50V	(SVO-1500P)
C180	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C181	1-163-139-00	CERAMIC CHIP 820PF 5% 50V	(SVO-1500P)
C182	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C183	1-104-664-11	ELECT 47uF 20% 10V	(SVO-1500P)
C190	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C191	1-104-664-11	ELECT 47uF 20% 10V	
C192	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C193	1-104-664-11	ELECT 47uF 20% 10V	
C194	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C196	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C197	1-104-664-11	ELECT 47uF 20% 10V	
C198	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	
C200	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C201	1-104-664-11	ELECT 47uF 20% 10V	
C204	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C205	1-163-091-00	CERAMIC CHIP 8PF 50V	
C211	1-163-107-00	CERAMIC CHIP 39PF 5% 50V	(SVO-1500P)
C211	1-163-110-00	CERAMIC CHIP 51PF 5% 50V	(SVO-1500)
C212	1-163-257-11	CERAMIC CHIP 180PF 5% 50V	
C213	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	
C217	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C218	1-163-089-00	CERAMIC CHIP 6PF 50V	(SVO-1500P)
C218	1-163-090-00	CERAMIC CHIP 7PF 50V	(SVO-1500)
C219	1-163-103-00	CERAMIC CHIP 27PF 5% 50V	(SVO-1500P)
C220	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C221	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	(SVO-1500P)
C222	1-163-177-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C223	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C224	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	(SVO-1500P)
C228	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	(SVO-1500P)
C229	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	(SVO-1500P)
C230	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C231	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	(SVO-1500P)
C233	1-163-237-11	CERAMIC CHIP 27PF 5% 50V	(SVO-1500P)
C234	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C235	1-163-245-11	CERAMIC CHIP 56PF 5% 50V	(SVO-1500P)
C236	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C237	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	(SVO-1500P)
C237	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	(SVO-1500)
C238	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	(SVO-1500P)
C239	1-163-092-00	CERAMIC CHIP 9PF 0.25PF 50V	(SVO-1500P)
C240	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C241	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	
C242	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C243	1-104-664-11	ELECT 47uF 20% 10V	(SVO-1500P)
C244	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C247	1-163-104-00	CERAMIC CHIP 30PF 5% 50V	(SVO-1500P)
C247	1-163-099-00	CERAMIC CHIP 18PF 5% 50V	(SVO-1500)
C248	1-163-119-00	CERAMIC CHIP 120PF 5% 50V	(SVO-1500P)
C248	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	(SVO-1500)
C249	1-163-093-00	CERAMIC CHIP 10PF 5% 50V	(SVO-1500)
C250	1-163-125-00	CERAMIC CHIP 220PF 5% 50V	(SVO-1500P)
C250	1-163-123-00	CERAMIC CHIP 180PF 5% 50V	(SVO-1500)
C301	1-137-612-11	FILM 0.0068uF 5% 100V	
C302	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C303	1-124-589-11	ELECT 47uF 20% 16V	
C304	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C305	1-124-589-11	ELECT 47uF 20% 16V	
C306	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C307	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C308	1-104-697-11	FILM 0.047uF 5% 100V	
C321	1-104-695-11	FILM 330PF 5% 100V	
C360	1-124-465-00	ELECT 0.47uF 20% 50V	
C361	1-161-051-00	CERAMIC 0.01uF 10% 50V	
C381	1-124-925-11	ELECT 2.2uF 20% 100V	
C382	1-124-925-11	ELECT 2.2uF 20% 100V	
C383	1-124-907-11	ELECT 10uF 20% 50V	

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Ref. No.	Part No.	Description			Remark
C401	1-165-319-11	CERAMIC CHIP	0. 1uF		50V
C402	1-104-665-11	ELECT	100uF	20%	16V
C403	1-165-319-11	CERAMIC CHIP	0. 1uF		50V
C404	1-163-033-91	CERAMIC CHIP	0. 022uF		50V
C405	1-163-033-91	CERAMIC CHIP	0. 022uF		50V
C406	1-104-665-11	ELECT	100uF	20%	16V
C407	1-124-907-11	ELECT	10uF	20%	50V
C410	1-124-248-00	ELECT	22uF	20%	35V
C411	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C412	1-130-487-00	MYLAR	0. 022uF	5%	50V
C413	1-130-491-00	MYLAR	0. 047uF	5%	50V (SVO-1500P)
C413	1-130-489-00	MYLAR	0. 033uF	5%	50V (SVO-1500)
C417	1-124-261-00	ELECT	10uF	20%	50V
C422	1-163-059-00	CERAMIC CHIP	0. 01uF	10%	50V
C423	1-104-664-11	ELECT	47uF	20%	10V
C424	1-164-344-11	CERAMIC CHIP	0. 068uF	10%	25V
C425	1-126-233-11	ELECT	22uF	20%	50V
C426	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V
C427	1-124-584-00	ELECT	100uF	20%	10V (SVO-1500P)
C428	1-163-017-00	CERAMIC CHIP	0. 0047uF	5%	50V
C429	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C430	1-124-257-00	ELECT	2. 2uF	20%	50V
C431	1-164-344-11	CERAMIC CHIP	0. 068uF	10%	25V
C432	1-126-163-11	ELECT	4. 7uF	20%	50V
C433	1-126-163-11	ELECT	4. 7uF	20%	50V
C447	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C448	1-126-233-11	ELECT	22uF	20%	50V
C450	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C480	1-124-248-00	ELECT	22uF	20%	35V
C481	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C499	1-161-021-11	CERAMIC	0. 047uF	10%	25V
C501	1-163-038-91	CERAMIC CHIP	0. 1uF		25V
C504	1-124-584-00	ELECT	100uF	20%	10V
C505	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C506	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C507	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C508	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C509	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C511	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C512	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C513	1-163-035-00	CERAMIC CHIP	0. 047uF		50V
C514	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C515	1-163-011-11	CERAMIC CHIP	0. 0015uF	10%	50V
C516	1-124-925-11	ELECT	2. 2uF	20%	100V
C517	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C518	1-124-916-11	ELECT	22uF	20%	63V
C601	1-124-465-00	ELECT	0. 47uF	20%	50V
C602	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C603	1-163-229-91	CERAMIC CHIP	12PF	5%	50V

Ref. No.	Part No.	Description			Remark
C604	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C605	1-104-664-11	ELECT	47uF	20%	10V
C606	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C607	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C608	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C609	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C610	1-104-664-11	ELECT	47uF	20%	10V
C611	1-130-487-00	MYLAR	0. 022uF	5%	50V
C612	1-163-235-11	CERAMIC CHIP	22PF	5%	50V (SVO-1500P)
C613	1-163-234-11	CERAMIC CHIP	20PF	5%	50V (SVO-1500P)
C614	1-124-271-91	ELECT	1uF	20%	50V
C615	1-130-481-90	MYLAR	0. 0068uF	5%	50V
C616	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C618	1-124-903-11	ELECT	1uF	20%	50V
C624	1-163-031-11	CERAMIC CHIP	0. 01uF		50V
C625	1-124-261-00	ELECT	10uF	20%	50V
C626	1-124-261-00	ELECT	10uF	20%	50V
C627	1-124-907-11	ELECT	10uF	20%	50V
C628	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C629	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C698	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (SVO-1500)
C699	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (SVO-1500)
C731	1-126-941-11	ELECT	470uF	20%	6. 3V
C732	1-126-941-11	ELECT	470uF	20%	6. 3V
C733	1-104-664-11	ELECT	47uF	20%	16V
C734	1-104-664-11	ELECT	47uF	20%	16V
C751	1-126-163-11	ELECT	4. 7uF	20%	50V
C753	1-124-464-11	ELECT	0. 22uF	20%	50V
C754	1-124-443-00	ELECT	100uF	20%	10V (SVO-1500)
C755	1-124-261-00	ELECT	10uF	20%	50V
C756	1-126-163-11	ELECT	4. 7uF	20%	50V
C757	1-124-261-00	ELECT	10uF	20%	50V
C760	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C761	1-124-248-00	ELECT	22uF	20%	35V
C763	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V
C797	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V (SVO-1500)
C798	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V (SVO-1500)
C799	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V (SVO-1500)
C851	1-124-925-11	ELECT	2. 2uF	20%	100V
C852	1-124-925-11	ELECT	2. 2uF	20%	100V
C853	1-124-465-00	ELECT	0. 47uF	20%	50V
C854	1-124-464-11	ELECT	0. 22uF	20%	50V
C855	1-124-248-00	ELECT	22uF	20%	35V
C902	1-104-665-11	ELECT	100uF	20%	16V
C904	1-104-665-11	ELECT	100uF	20%	16V

< JACK >

Ref. No.	Part No.	Description	Remark
CJ701	1-766-563-11	JACK, PIN 4P (AUDIO LINE1 IN/OUT)	

When indicating parts by reference number, please include the board.

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN103	1-506-474-11	PIN, CONNECTOR 9P	
* CN104	1-564-009-11	PIN, CONNECTOR 10P	
* CN301	1-560-891-00	PIN, CONNECTOR 3P	
* CN302	1-560-892-00	PIN, CONNECTOR 4P	
* CN303	1-560-892-00	PIN, CONNECTOR 4P	
CN304	1-506-473-11	PIN, CONNECTOR 8P	
CN305	1-506-474-11	PIN, CONNECTOR 9P	
* CN354	1-564-004-11	PIN, CONNECTOR 5P	
CN401	1-506-474-11	PIN, CONNECTOR 9P	
CN402	1-506-469-11	PIN, CONNECTOR 4P	
CN403	1-506-475-11	PIN, CONNECTOR 10P	
CN404	1-506-478-11	PIN, CONNECTOR 13P	
CN405	1-564-002-11	PIN, CONNECTOR 3P	
CN406	1-691-706-11	CONNECTOR, BOARD TO BOARD 30P	
CN601	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN701	1-506-469-11	PIN, CONNECTOR 4P	
CN751	1-506-469-11	PIN, CONNECTOR 4P	
* CN752	1-564-001-11	PIN, CONNECTOR 2P	
CN753	1-506-469-11	PIN, CONNECTOR 4P	

< TRIMMER >

Ref. No.	Part No.	Description	Remark
CT601	1-141-334-11	CAP, TRIMMER	

< DIODE >

Ref. No.	Part No.	Description		Remark
D101	8-719-914-43	DIODE	DAN202K-T-146	(SVO-1500P)
D102	8-719-914-43	DIODE	DAN202K-T-146	
D103	8-719-914-43	DIODE	DAN202K-T-146	
D106	8-719-991-33	DIODE	1SS133T-77	
D107	8-719-991-33	DIODE	1SS133T-77	
D108	8-719-914-43	DIODE	DAN202K-T-146	
D110	8-719-911-19	DIODE	1SS119	
D111	8-719-914-43	DIODE	DAN202K-T-146	(SVO-1500P)
D112	8-719-914-43	DIODE	DAN202K-T-146	(SVO-1500P)
D113	8-719-914-43	DIODE	DAN202K-T-146	
D114	8-719-914-43	DIODE	DAN202K-T-146	
D304	8-719-109-74	DIODE	RD4. 3ES-B1	
D350	8-719-991-33	DIODE	1SS133T-77	
D381	8-719-914-42	DIODE	DA204K-T-146	
D383	8-719-914-42	DIODE	DA204K-T-146	
D402	8-719-109-84	DIODE	RD5. 1ES-B1	
D403	8-719-991-33	DIODE	1SS133T-77	
D404	8-719-200-82	DIODE	11ES2	
D501	8-719-991-33	DIODE	1SS133T-77	
D502	8-719-991-33	DIODE	1SS133T-77	
D503	8-719-914-43	DIODE	DAN202K-T-146	
D510	8-719-911-19	DIODE	1SS119	
D601	8-719-801-48	DIODE	1SS193	
D602	8-719-200-82	DIODE	11ES2	
D604	8-719-991-33	DIODE	1SS133T-77	
D751	8-719-109-74	DIODE	RD4. 3ES-B1	
D752	8-719-109-74	DIODE	RD4. 3ES-B1	
D753	8-719-109-74	DIODE	RD4. 3ES-B1	
D754	8-719-109-74	DIODE	RD4. 3ES-B1	
D851	8-719-200-82	DIODE	11ES2	
D901	8-719-200-76	DIODE	10E1N	

< DELAY LINE >

Ref. No.	Part No.	Description	Remark
DL101	1-415-728-31	DELAY LINE, 2H (ULTRASONIC)	(SVO-1500P)
DL102	1-415-856-11	DELAY LINE, ULTRASONIC GLASS	(SVO-1500P)
DL103	1-415-668-11	DELAY LINE, ULTRASONIC	

< IC >

Ref. No.	Part No.	Description		Remark
IC101	8-759-046-76	IC	LA7396	
IC102	8-759-197-97	IC	LC89925M-TE-R	(SVO-1500P)
IC102	8-759-198-00	IC	LC89915M-TE-R	(SVO-1500)
IC103	8-759-637-11	IC	M52063SP	(SVO-1500P)
IC104	8-759-510-73	IC	BA10393F-E2	(SVO-1500P)
IC104	8-759-998-92	IC	LM393D	(SVO-1500P)
IC381	8-759-981-44	IC	BA15218F-K	
⚠IC401	8-759-501-73	IC	BA6418N	
IC402	8-759-912-77	IC	uPC324C	(SVO-1500P)
IC402	8-759-938-12	IC	BA10324	(SVO-1500)
IC403	8-759-981-48	IC	RC082M2G2	
IC405	8-759-246-14	IC	TA8823N	
IC406	8-759-924-46	IC	BA4560F	
IC501	8-752-848-13	IC	CXP80724-077Q	(SVO-1500P)
IC501	8-752-848-12	IC	CXP80724-080Q	(SVO-1500)
IC601	8-759-190-47	IC	LC74790M-9032	
IC602	8-759-344-70	IC	MM1111XS	
IC751	8-759-942-24	IC	BA3312N	
IC851	8-759-933-22	IC	BA3707	
IC901	8-759-513-72	IC	PQ12RF11	
IC902	8-759-054-12	IC	PQ09RF11	

< JACK >

Ref. No.	Part No.	Description	Remark
J751	1-770-804-11	JACK, LARGE TYPE (DIA 6. 3) (HEADPHONES)	
J751	1-750-781-11	JACK, LARGE TYPE (HEADPHONES)	(SVO-1500)
J752	1-507-562-00	JACK (CONTROL S IN)	
J753	1-507-562-00	JACK (CONTROL S OUT)	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR105	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)
JR106	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)
JR107	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR108	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR109	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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Ref. No.	Part No.	Description	Remark
JR110	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR111	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)
JR112	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR113	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR114	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR116	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR117	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR118	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR121	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR144	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR201	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR202	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR203	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR204	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR205	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR206	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR207	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR208	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR209	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR210	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR211	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR212	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR213	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR214	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR215	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR216	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR217	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR218	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR219	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR220	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR221	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR222	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR223	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR224	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR225	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR226	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR227	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR229	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR230	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR231	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR232	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR234	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR235	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR236	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR237	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR238	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR239	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR240	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR242	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR243	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR244	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR245	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR246	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR247	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR248	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR249	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR250	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR251	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR252	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR253	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR254	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR255	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR256	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR257	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR258	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR259	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR261	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR263	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
JR264	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR270	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR271	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR360	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR401	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR509	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR510	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR525	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR601	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR784	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)

< COIL >

Ref. No.	Part No.	Description	Remark
L101	1-410-524-41	INDUCTOR 180uH	
L102	1-408-411-00	INDUCTOR 15uH	(SVO-1500P)
L103	1-408-411-00	INDUCTOR 15uH	(SVO-1500P)
L105	1-410-522-11	INDUCTOR 120uH	
L106	1-410-516-11	INDUCTOR 39uH	
L108	1-408-403-00	INDUCTOR 3.3uH	
L109	1-414-189-31	INDUCTOR 100uH	
L110	1-414-189-31	INDUCTOR 100uH	
L111	1-410-515-11	INDUCTOR 33uH	(SVO-1500P)
L112	1-410-517-11	INDUCTOR 47uH	(SVO-1500P)
L112	1-410-518-41	INDUCTOR 56uH	(SVO-1500)
L113	1-410-437-11	INDUCTOR 330uH	
L114	1-410-439-11	INDUCTOR 470uH	
L115	1-414-189-31	INDUCTOR 100uH	
L116	1-414-189-31	INDUCTOR 100uH	(SVO-1500P)
L118	1-410-519-11	INDUCTOR 68uH	(SVO-1500P)
L118	1-410-521-11	INDUCTOR 100uH	(SVO-1500)
L119	1-410-521-11	INDUCTOR 100uH	

When indicating parts by reference number, please include the board.

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Ref. No.	Part No.	Description	Remark
L120	1-410-515-11	INDUCTOR 33uH	
L121	1-410-515-11	INDUCTOR 33uH	
L122	1-414-189-31	INDUCTOR 100uH	(SVO-1500P)
L123	1-410-435-21	INDUCTOR 220uH	
L301	1-410-687-11	INDUCTOR 1.2mH	
L302	1-410-687-11	INDUCTOR 1.2mH	
L401	1-414-185-41	INDUCTOR 22uH	
L403	1-414-185-41	INDUCTOR 22uH	
L501	1-414-188-41	INDUCTOR 68uH	
L502	1-414-183-41	INDUCTOR 10uH	
L503	1-414-189-31	INDUCTOR 100uH	
L601	1-414-189-31	INDUCTOR 100uH	
L602	1-408-406-00	INDUCTOR 5.6uH	
L603	1-414-189-31	INDUCTOR 100uH	
L605	1-414-189-31	INDUCTOR 100uH	
L708	1-414-189-31	INDUCTOR 100uH	
L709	1-414-189-31	INDUCTOR 100uH	
L757	1-408-401-00	INDUCTOR 2.2uH	(SVO-1500)
⚠L851	1-408-417-00	INDUCTOR 47uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS401	1-532-637-00	LINK, IC 1.0A	
⚠PS901	1-532-727-11	LINK, IC 0.25A	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q101	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q102	8-729-422-29	TRANSISTOR 2SD601A-S	
Q103	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q104	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q105	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q106	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q107	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q110	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q111	8-729-422-37	TRANSISTOR 2SB709A-R	
Q112	8-729-422-37	TRANSISTOR 2SB709A-R	
Q113	8-729-901-01	TRANSISTOR DTC144EK	
Q114	8-729-901-47	TRANSISTOR DTA143EK	
Q115	8-729-901-06	TRANSISTOR DTA144EK	
Q116	8-729-422-37	TRANSISTOR 2SB709A-R	
Q117	8-729-422-37	TRANSISTOR 2SB709A-R	
Q118	8-729-422-29	TRANSISTOR 2SD601A-S	
Q120	8-729-422-37	TRANSISTOR 2SB709A-R	
Q125	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q133	8-729-901-01	TRANSISTOR DTC144EK	
Q134	8-729-901-01	TRANSISTOR DTC144EK	
Q135	8-729-901-01	TRANSISTOR DTC144EK	
Q136	8-729-901-01	TRANSISTOR DTC144EK	
Q137	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q138	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q139	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q140	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q141	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q142	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q143	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q144	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q145	8-729-901-01	TRANSISTOR DTC144EK	
Q146	8-729-901-01	TRANSISTOR DTC144EK	
Q147	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q148	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q149	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q150	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q151	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q153	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q154	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q156	8-729-422-29	TRANSISTOR 2SD601A-S	(SVO-1500P)
Q157	8-729-422-37	TRANSISTOR 2SB709A-R	(SVO-1500P)
Q158	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q159	8-729-422-29	TRANSISTOR 2SD601A-S	
Q160	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q161	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q162	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q163	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)
Q165	8-729-901-06	TRANSISTOR DTA144EK	(SVO-1500P)
Q166	8-729-901-06	TRANSISTOR DTA144EK	
Q170	8-729-901-06	TRANSISTOR DTA144EK	
Q171	8-729-901-01	TRANSISTOR DTC144EK	
Q174	8-729-901-01	TRANSISTOR DTC144EK	
⚠Q301	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q302	8-729-216-22	TRANSISTOR 2SA1162	
Q303	8-729-901-01	TRANSISTOR DTC144EK	
Q304	8-729-216-22	TRANSISTOR 2SA1162	
⚠Q305	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q372	8-729-901-06	TRANSISTOR DTA144EK	
Q373	8-729-901-01	TRANSISTOR DTC144EK	
⚠Q401	8-729-901-47	TRANSISTOR DTA143EK	
Q501	8-729-422-29	TRANSISTOR 2SD601A-S	
Q502	8-729-901-01	TRANSISTOR DTC144EK	
Q503	8-729-901-01	TRANSISTOR DTC144EK	
Q504	8-729-422-29	TRANSISTOR 2SD601A-S	
Q505	8-729-422-29	TRANSISTOR 2SD601A-S	
Q506	8-729-422-37	TRANSISTOR 2SB709A-R	
Q601	8-729-901-06	TRANSISTOR DTA144EK	
Q603	8-729-422-37	TRANSISTOR 2SB709A-R	
Q604	8-729-422-29	TRANSISTOR 2SD601A-S	
Q605	8-729-422-37	TRANSISTOR 2SB709A-R	
Q707	8-729-422-37	TRANSISTOR 2SB709A-R	
Q708	8-729-422-37	TRANSISTOR 2SB709A-R	
Q851	8-729-422-29	TRANSISTOR 2SD601A-S	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
Q852	*8-729-901-01*	*TRANSISTOR DTC144EK*	
		< RESISTOR >	
R101	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R102	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R103	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R104	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500P)
R106	1-216-232-00	METAL GLAZE 27K 5% 1/8W	(SVO-1500P)
R107	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R108	1-249-429-11	CARBON 10K 5% 1/4W	(SVO-1500P)
R109	1-216-089-91	METAL GLAZE 47K 5% 1/10W	(SVO-1500P)
R110	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(SVO-1500P)
R111	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	(SVO-1500P)
R112	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R113	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500P)
R114	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SVO-1500P)
R115	1-216-037-00	METAL CHIP 330 5% 1/10W	(SVO-1500P)
R116	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(SVO-1500P)
R117	1-216-035-00	METAL CHIP 270 5% 1/10W	(SVO-1500P)
R118	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(SVO-1500P)
R119	1-216-035-00	METAL CHIP 270 5% 1/10W	(SVO-1500P)
R121	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R122	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R123	1-216-220-00	METAL GLAZE 8.2K 5% 1/8W	
R124	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R125	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R126	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R129	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R130	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R131	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R132	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R134	1-249-424-11	CARBON 3.9K 5% 1/4W	
R135	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R136	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	(SVO-1500P)
R136	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(SVO-1500)
R138	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R139	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R140	1-216-037-00	METAL CHIP 330 5% 1/10W	
R141	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R142	1-216-052-00	METAL CHIP 1.3K 5% 1/10W	
R143	1-216-036-00	METAL CHIP 300 5% 1/10W	
R145	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R146	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R149	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R150	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R151	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R152	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R153	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R154	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R155	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R157	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R158	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R159	1-216-045-00	METAL CHIP 680 5% 1/10W	(SVO-1500P)
R160	1-216-045-00	METAL CHIP 680 5% 1/10W	(SVO-1500P)
R161	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R162	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	(SVO-1500P)
R163	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	(SVO-1500P)
R164	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500P)
R165	1-216-045-00	METAL CHIP 680 5% 1/10W	(SVO-1500P)
R166	1-216-047-91	METAL GLAZE 820 5% 1/10W	(SVO-1500P)
R169	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SVO-1500P)
R170	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SVO-1500P)
R171	1-216-079-00	METAL CHIP 18K 5% 1/10W	(SVO-1500P)
R172	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500P)
R173	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SVO-1500P)
R174	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(SVO-1500P)
R177	1-216-039-00	METAL CHIP 390 5% 1/10W	
R178	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R179	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	(SVO-1500P)
R180	1-249-429-11	CARBON 10K 5% 1/4W	(SVO-1500P)
R181	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(SVO-1500P)
R182	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500P)
R185	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(SVO-1500P)
R186	1-216-234-00	METAL GLAZE 33K 5% 1/8W	(SVO-1500P)
R187	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500P)
R188	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(SVO-1500P)
R189	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500P)
R190	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R191	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R192	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(SVO-1500P)
R192	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	(SVO-1500)
R193	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(SVO-1500P)
R193	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	(SVO-1500)
R194	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R195	1-216-079-00	METAL CHIP 18K 5% 1/10W	(SVO-1500P)
R196	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500P)
R197	1-216-043-91	METAL GLAZE 560 5% 1/10W	(SVO-1500P)
R198	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500P)
R199	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SVO-1500P)
R201	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R202	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R203	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R204	1-216-089-91	METAL GLAZE 47K 5% 1/10W	(SVO-1500P)
R205	1-216-246-91	METAL GLAZE 100K 5% 1/8W	(SVO-1500P)
R206	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R210	1-216-041-00	METAL CHIP 470 5% 1/10W	(SVO-1500P)

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
R210	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500)
R213	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R214	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R215	1-216-045-00	METAL CHIP 680 5% 1/10W	
R216	1-249-424-11	CARBON 3.9K 5% 1/4W	
R218	1-216-295-91	CONDUCTOR, CHIP (2012)	
R219	1-216-295-91	CONDUCTOR, CHIP (2012)	
R220	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R221	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R222	1-216-041-00	METAL CHIP 470 5% 1/10W	
R225	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SVO-1500P)
R226	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R230	1-216-295-91	CONDUCTOR, CHIP (2012)	
R250	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R251	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(SVO-1500P)
R251	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500)
R252	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R253	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SVO-1500P)
R254	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SVO-1500)
R255	1-216-077-00	METAL CHIP 15K 5% 1/10W	(SVO-1500P)
R255	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	(SVO-1500)
R256	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SVO-1500P)
R301	1-216-001-00	METAL CHIP 10 5% 1/10W	
R302	1-216-295-91	CONDUCTOR, CHIP (2012)	
R303	1-216-081-00	METAL CHIP 22K 5% 1/10W	
⚠R304	1-249-395-11	CARBON 15 5% 1/4W F	
R305	1-249-417-11	CARBON 1K 5% 1/4W	
R306	1-216-083-00	METAL CHIP 27K 5% 1/10W	
⚠R307	1-249-394-11	CARBON 12 5% 1/4W F	
R308	1-249-417-11	CARBON 1K 5% 1/4W	
R320	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R321	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R350	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R351	1-216-295-91	CONDUCTOR, CHIP (2012)	
R352	1-216-295-91	CONDUCTOR, CHIP (2012)	
R353	1-216-295-91	CONDUCTOR, CHIP (2012)	
R356	1-216-295-91	CONDUCTOR, CHIP (2012)	
R357	1-216-295-91	CONDUCTOR, CHIP (2012)	
R358	1-216-295-91	CONDUCTOR, CHIP (2012)	
R359	1-216-295-91	CONDUCTOR, CHIP (2012)	
R360	1-216-295-91	CONDUCTOR, CHIP (2012)	
R361	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R381	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R382	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R383	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R384	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R385	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R386	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R387	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R388	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R389	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R390	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R391	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R392	1-249-416-11	CARBON 820 5% 1/4W	
R401	1-216-192-00	METAL CHIP 560 5% 1/8W	
R402	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R404	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R405	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R406	1-249-437-11	CARBON 47K 5% 1/4W	
R407	1-249-437-11	CARBON 47K 5% 1/4W	
R408	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R409	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R410	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R411	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R412	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R416	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R417	1-216-033-00	METAL CHIP 220 5% 1/10W	
R418	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R419	1-249-425-11	CARBON 4.7K 5% 1/4W	
R421	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R422	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R423	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R424	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R425	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R426	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R427	1-249-432-11	CARBON 18K 5% 1/4W	
R430	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R431	1-249-434-11	CARBON 27K 5% 1/4W	
R432	1-247-885-00	CARBON 180K 5% 1/4W	
R433	1-249-436-11	CARBON 39K 5% 1/4W	
R434	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R435	1-216-214-00	METAL GLAZE 4.7K 5% 1/8W	
R436	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R437	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R438	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R448	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R449	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R452	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R455	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R456	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R457	1-216-091-00	METAL CHIP 56K 5% 1/10W	
R460	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R464	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R465	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R466	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R467	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R468	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R469	1-216-097-91	METAL GLAZE 100K 5% 1/10W	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

MA-246

Ref. No.	Part No.	Description	Remark
R470	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R471	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R484	1-216-037-00	METAL CHIP 330 5% 1/10W	
R489	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R490	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R492	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R493	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R494	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R501	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R503	1-216-295-91	CONDUCTOR, CHIP (2012)	
R504	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R505	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R506	1-249-429-11	CARBON 10K 5% 1/4W	
R507	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R508	1-216-044-00	METAL CHIP 620 5% 1/10W	(SVO-1500P)
R508	1-216-040-00	METAL GLAZE 430 5% 1/10W	(SVO-1500)
R509	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R509	1-216-040-00	METAL GLAZE 430 5% 1/10W	(SVO-1500)
R510	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R511	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R512	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R513	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R514	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R515	1-247-807-31	CARBON 100 5% 1/4W	
R516	1-249-421-11	CARBON 2.2K 5% 1/4W	
R517	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R518	1-247-807-31	CARBON 100 5% 1/4W	
R519	1-216-041-00	METAL CHIP 470 5% 1/10W	
R520	1-216-033-00	METAL CHIP 220 5% 1/10W	
R521	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R522	1-249-417-11	CARBON 1K 5% 1/4W	
R523	1-249-429-11	CARBON 10K 5% 1/4W	
R524	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R526	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R527	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R528	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R529	1-249-431-11	CARBON 15K 5% 1/4W	
R532	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R533	1-249-437-11	CARBON 47K 5% 1/4W	
R534	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R601	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R602	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R603	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R604	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R605	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R606	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R608	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R614	1-216-033-00	METAL CHIP 220 5% 1/10W	
R615	1-216-049-91	METAL GLAZE 1K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R616	1-216-023-00	METAL CHIP 82 5% 1/10W	
R617	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R618	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R619	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R620	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R630	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R650	1-216-033-00	METAL CHIP 220 5% 1/10W	
R720	1-216-023-00	METAL CHIP 82 5% 1/10W	
R733	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R734	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R740	1-249-408-11	CARBON 180 5% 1/4W	
R741	1-249-407-11	CARBON 150 5% 1/4W	
R742	1-216-172-00	METAL CHIP 82 5% 1/8W	
R743	1-249-411-11	CARBON 330 5% 1/4W	
R750	1-249-399-11	CARBON 33 5% 1/4W	(SVO-1500)
R751	1-216-072-00	METAL CHIP 9.1K 5% 1/10W	
R753	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R756	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	
R757	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R759	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	
R761	1-249-411-11	CARBON 330 5% 1/4W	
R764	1-249-417-11	CARBON 1K 5% 1/4W	(SVO-1500)
R768	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R770	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R781	1-249-438-11	CARBON 56K 5% 1/4W	(SVO-1500P)
R783	1-216-091-00	METAL CHIP 56K 5% 1/10W	(SVO-1500P)
R784	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
R851	1-249-427-11	CARBON 6.8K 5% 1/4W	
R852	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R853	1-249-424-11	CARBON 3.9K 5% 1/4W	
R854	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R855	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R856	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R857	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R901	1-216-378-11	METAL OXIDE 5.6 5% 2W	
R902	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R999	1-216-073-00	METAL CHIP 10K 5% 1/10W	

< RF MODULATOR >

Ref. No.	Part No.	Description	Remark
⚠RF701	1-466-989-11	MODULATOR, RF	(SVO-1500)

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV102	1-241-630-11	RES, ADJ, CARBON 10K	
RV103	1-241-630-11	RES, ADJ, CARBON 10K (AGC)	
RV104	1-241-630-11	RES, ADJ, CARBON 10K (DEV)	
RV105	1-241-630-11	RES, ADJ, CARBON 10K (PB LEVEL)	
RV106	1-241-762-11	RES, ADJ, CARBON 2.2K (REC C)	
RV107	1-241-630-11	RES, ADJ, CARBON 10K (AFC)	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

MA-246 MF-278

Ref. No.	Part No.	Description	Remark
RV301	1-241-767-21	RES, ADJ, CARBON 100K	
RV501	1-238-019-11	RES, ADJ, CARBON 47K	
RV502	1-238-019-11	RES, ADJ, CARBON 47K	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S701	1-692-686-11	SWITCH, SLIDE (NTSC PB)	(SVO-1500P)

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T301	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	
T302	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X101	1-578-688-11	VIBRATOR, CRYSTAL	(SVO-1500P)
X101	1-577-380-11	VIBRATOR, CRYSTAL	(SVO-1500)
X102	1-577-380-11	VIBRATOR, CRYSTAL	(SVO-1500P)
X103	1-760-097-11	VIBRATOR, CRYSTAL (8.86MHz)	(SVO-1500P)
X501	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)	
X601	1-577-381-11	VIBRATOR, CRYSTAL (14MHz)	
X602	1-577-289-11	VIBRATOR, CRYSTAL	(SVO-1500P)

Ref. No.	Part No.	Description	Remark
*	A-6721-671-A	MF-278 BOARD, COMPLETE	(SVO-1500P)
*	A-6721-675-A	MF-278 BOARD, COMPLETE	(SVO-1500)

****

(Ref. No. 4,000 Series)

Ref. No.	Part No.	Description	Remark
*	3-955-869-01	HOLDER, FL	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C102	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C103	1-124-584-00	ELECT 100uF 20% 10V	
C104	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C105	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C106	1-124-589-11	ELECT 47uF 20% 16V	
C107	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C108	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C109	1-126-096-11	ELECT 10uF 20% 35V	
C199	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN021	1-568-084-11	CONNECTOR (RECEPTALE) 30P	
CN022	1-750-984-11	CONNECTOR, BOARD TO BOARD 15P	
CN023	1-580-850-11	CONNECTOR (DMS) 8P	
* CN024	1-563-609-11	CONNECTOR, FLEXIBLE 6P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D108	8-719-110-08	DIODE RD8.2ES-B2	
D109	8-719-911-19	DIODE 1SS119	
D110	8-719-911-19	DIODE 1SS119	(SVO-1500P)
D111	8-719-109-97	DIODE RD6.8ES-B2	
D112	8-719-940-99	LED SLR34VC3	
D113	8-719-940-99	LED SLR34VC3	
D114	8-719-991-33	DIODE 1SS133T-77	
D115	8-719-109-97	DIODE RD6.8ES-B2	

< IC >

Ref. No.	Part No.	Description	Remark
IC101	8-752-868-51	IC CXP50116-449Q	
IC102	8-759-090-05	IC PST572HMT-T1	
IC103	8-759-518-38	IC PST572CMT	

< JACK >

Ref. No.	Part No.	Description	Remark
J102	1-770-803-11	JACK, SMALL TYPE (DIA 3.5)(HEADPHONES)	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR1	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR2	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR3	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR4	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR5	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR6	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR9	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR105	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)

< COIL >

Ref. No.	Part No.	Description	Remark
L101	1-410-521-11	INDUCTOR 100uH	
L102	1-410-501-11	INDUCTOR 2.2uH	
L103	1-410-501-11	INDUCTOR 2.2uH	

< FLUORESCENT INDICATOR >

Ref. No.	Part No.	Description	Remark
ND021	1-810-294-11	INDICATOR TUBE, FLUORESCENT	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q101	8-729-900-53	TRANSISTOR DTC114EK	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R101	1-249-418-11	CARBON 1.2K 5% 1/4W	
R102	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R103	1-216-188-00	METAL GLAZE 390 5% 1/8W	
R104	1-216-295-91	CONDUCTOR, CHIP (2012)	
R105	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R108	1-216-214-00	METAL GLAZE 4.7K 5% 1/8W	
R109	1-216-214-00	METAL GLAZE 4.7K 5% 1/8W	
R110	1-249-425-11	CARBON 4.7K 5% 1/4W	
R111	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R112	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R113	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R114	1-216-073-00	METAL CHIP 10K 5% 1/10W	

When indicating parts by reference number, please include the board.

MF-278 MF-280 MF-282

Ref. No.	Part No.	Description	Remark
R115	1-216-075-00	METAL CHIP 12k 5% 1/10W	
R116	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R117	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R118	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)
R119	1-216-075-00	METAL CHIP 5.1K 5% 1/10W	(SVO-1500P)
R120	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R121	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R122	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R123	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R124	1-249-425-11	CARBON 4.7K 5% 1/4W	
R125	1-216-238-91	METAL GLAZE 47K 5% 1/8W	
R131	1-216-172-00	METAL CHIP 82 5% 1/8W	
R133	1-249-418-11	CARBON 1.2K 5% 1/4W	
R134	1-216-188-00	METAL GLAZE 390 5% 1/8W	
R135	1-216-075-00	METAL CHIP 12k 5% 1/10W	
R136	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500P)
R137	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(SVO-1500)
R138	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R144	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
		< SWITCH >	
S101	1-571-977-11	SWITCH, TACTIL (PAUSE)	
S102	1-571-977-11	SWITCH, TACTIL (TV/VTR)	(SVO-1500)
S103	1-571-977-11	SWITCH, TACTIL (REC)	
S104	1-572-560-11	SWITCH, SLIDE (INHIBIT)	
S105	1-572-560-11	SWITCH, SLIDE (COLOR SYSTEM)	(SVO-1500P)
S106	1-571-977-11	SWITCH, TACTIL (AUDIO DUB)	
S107	1-572-560-11	SWITCH, SLIDE (ONE TIMER PLAY/OFF/AUTO REPEAT)	
S108	1-571-427-11	SWITCH, SLIDE (AUDIO MIX)	
S114	1-571-977-11	SWITCH, TACTIL (INPUT SELECT)	
		< VIBRATOR >	
X101	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)	

Ref. No.	Part No.	Description	Remark
*	A-6721-672-A	MF-280 BOARD, COMPLETE ************************	(Ref. No. 1,000 Series)
		< CONNECTOR >	
CN025	1-506-471-11	PIN, CONNECTOR 6P	
CN026	1-506-473-11	PIN, CONNECTOR 8P	
		< JUMPER RESISTOR >	
JR103	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR104	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR105	1-216-295-91	CONDUCTOR, CHIP (2012)	

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R001	1-216-080-00	METAL GLAZE 20K 5% 1/10W	
R002	1-216-296-91	CONDUCTOR, CHIP (3216)	
R003	1-216-080-00	METAL GLAZE 20K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV101	1-223-929-11	RES, VAR, CARBON 10K/10K (HEADPHONE LEVEL)	
RV102	1-223-930-11	RES, VAR, CARBON 10K (L REC LEVEL)	
RV103	1-223-930-11	RES, VAR, CARBON 10K (R REC LEVEL)	
RV104	1-237-979-11	RES, VAR, CARBON 10K (MIC LEVEL)	

Ref. No.	Part No.	Description	Remark
*	A-6721-673-A	MF-282 BOARD, COMPLETE ************************	(Ref. No. 1,000 Series)
		< CAPACITOR >	
C001	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C002	1-163-247-91	CERAMIC CHIP 0.001uF 10% 50V	
C003	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C004	1-163-247-91	CERAMIC CHIP 0.001uF 10% 50V	
C005	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN001	1-750-983-11	CONNECTOR, BOARD TO BOARD 15P	
		< DIODE >	
D001	8-719-303-00	LED SEL2510C	
D002	8-719-303-00	LED SEL2510C	
D009	1-162-294-21	CERAMIC 0.001uF 10% 50V	
D010	8-719-991-33	DIODE 1SS133T-77	
D011	8-719-940-99	LED SLR34VC3	(SVO-1500P)
		< IC >	
IC001	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
		< JACK >	
J001	1-750-985-11	JACK, PIN 6P (LINE IN/OUT 2)	
		< JUMPER RESISTOR >	
JR001	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR002	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR003	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR004	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR005	1-216-295-91	CONDUCTOR, CHIP (2012)	
		< TRANSISTOR >	
Q001	8-729-901-01	TRANSISTOR DTC144EK	(SVO-1500P)

When indicating parts by reference number, please include the board.

MF-282 POWER BLOCK

Ref. No.	Part No.	Description	Remark
		< RESISTOR >	
R001	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R002	1-216-029-00	METAL CHIP 150 5% 1/10W	
R003	1-216-029-00	METAL CHIP 150 5% 1/10W	
R004	1-216-027-00	METAL CHIP 120 5% 1/10W	
R005	1-216-029-00	METAL CHIP 150 5% 1/10W	(SVO-1500P)
		< SWITCH >	
S001	1-571-977-11	SWITCH, TACTIL (POWER ON/OFF)	
S002	1-571-977-11	SWITCH, TACTIL (EJECT)	

Ref. No.	Part No.	Description	Remark
⚠	1-413-971-11	POWER BLOCK (SVO-1500) ***********	(Ref. No. 5,000 Series)
⚠	9-909-244-01	AC INLET 3P	
		< CAPACITOR >	
⚠C101	1-136-472-11	CAP, METALIZED FILM 0.1uF 125V	
⚠C102	1-136-472-11	CAP, METALIZED FILM 0.1uF 125V	
⚠C103	1-161-740-00	CAP, CERAMIC 470PF 400V	
⚠C104	1-161-740-00	CAP, CERAMIC 470PF 400V	
⚠C105	1-161-742-00	CERAMIC 0.0022uF 400V	
⚠C106	9-903-472-01	ELECT 150uF 200V	
C107	1-124-927-11	ELECT 4.7uF 100V	
C108	9-902-055-01	CERAMIC 100PF 1kV	
C109	1-136-207-11	METALIZED FILM 0.047uF 630V	
C110	1-130-491-00	PE TEREPHTHALATE 0.047uF 50V	
C111	1-130-491-00	PE TEREPHTHALATE 0.047uF 50V	
C201	1-126-964-11	ELECT 10uF 50V	
C202	1-126-768-11	ELECT 2200uF 16V	
C203	1-126-933-11	ELECT 100uF 16V	
C204	1-126-927-11	ELECT 2200uF 10V	
C205	1-126-925-11	ELECT 470uF 10V	
C206	1-124-122-11	ELECT 100uF 50V	
C207	1-126-916-11	ELECT 1000uF 6.3V	
C208	1-124-903-11	ELECT 1uF 50V	
C210	1-130-483-00	CAP, PE TEREPHTHALATE 0.01uF 50V	
C211	1-130-483-00	CAP, PE TEREPHTHALATE 0.01uF 50V	
		< CONNECTOR >	
⚠CN1	1-506-475-11	PIN, CONNECTOR 10P	
CN2	1-506-474-11	PIN, CONNECTOR 9P	
CN101	9-903-934-01	CONNECTOR 2P ASSY	
		< DIODE >	
⚠D101	8-719-510-06	DIODE S1WB60	
⚠D102	9-996-310-01	DIODE AG01A	
⚠D103	8-719-200-02	DIODE 10E2	
⚠D104	8-719-109-63	DIODE RD3.0ES-B2	
⚠D105	8-719-912-20	DIODE 1SS120	
⚠D106	8-719-304-63	DIODE RM11C	
⚠D201	8-719-313-16	DIODE AU02A	
⚠D202	9-902-061-01	DIODE RG4Z	
D203	8-719-200-02	DIODE 10E2	
⚠D204	8-719-981-00	DIODE ERC81-004	
⚠D206	8-719-313-16	DIODE AU02A	
⚠D207	8-719-981-00	DIODE ERC81-004	
⚠D208	8-719-160-63	DIODE RD15FB3	
		< FUSE >	
⚠F101	1-532-743-11	FUSE, GLASS TUBE 2A/125V	
		< BEAD >	
FB-1	9-902-053-01	BEAD CORE EXCEL	
		< IC >	
⚠IC201	8-759-420-19	IC AN1431T (REF VOLTAGE DET)	
		< COIL >	
⚠L101	9-900-520-01	LINE FILTER	
L202	9-902-762-01	COIL 20uH	
L203	9-902-762-01	COIL 20uH	
		< PHOTO CUPLER >	
⚠PC101	8-719-902-56	PHOTO CUPLER PC817	
		< IC LINK >	
⚠PS201	1-532-637-00	LINK, IC 1A	
		< TRANSISTOR >	
Q101	9-902-096-01	TRANSISTOR 2SC4234	
⚠Q102	8-729-023-98	TRANSISTOR 2SC3377-0	
		< RESISTOR >	
⚠R101	1-202-729-00	SOLID 6.8M 1/2W	
R102	1-249-441-11	CARBON 100K 1/4W	
R103	1-249-441-11	CARBON 100K 1/4W	
R104	1-249-429-11	CARBON 10K 1/4W	
⚠R106	1-215-927-00	METAL OXIDE FILM 47K 3W	
⚠R107	1-247-736-11	RES, CARBON 56 1/2W F	
⚠R108	1-247-736-11	RES, CARBON 56 1/2W F	
R109	1-247-826-11	RES, CARBON(SMALL) 620 1/4W	
⚠R201	1-247-727-11	RES, CARBON 10 1/2W F	
⚠R202	1-247-727-11	RES, CARBON 10 1/2W F	
⚠R203	1-212-857-00	RES, FUSE 10 1/4W	

When indicating parts by reference number, please include the board.

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POWER BLOCK

Ref. No.	Part No.	Description	Remark
⚠R204	1-217-371-00	RES, FUSE 0.47	1/4W
R205	1-247-735-11	RES, CARBON 47	1/2W
R206	1-215-428-00	RES, METAL FILM 2K	1/4W
R208	1-215-425-00	RES, METAL FILM 1.5K	1/4W
		< VARIABLE RESISTOR >	
VR201	9-902-761-01	VARIABLE 200	
		< TRANSFORMER >	
⚠T101	9-903-928-01	SWITCHING TRANSFORMER	

Ref. No.	Part No.	Description	Remark
⚠	1-473-343-11	POWER BLOCK (SVO-1500P) ***********	
		(Ref. No. 7,000 Series)	
⚠	9-936-222-01	AC INLET 3P	
		< CAPACITOR >	
⚠C101	1-136-472-11	CAP, METALIZED FILM 0.1uF	250V
⚠C102	1-136-472-11	CAP, METALIZED FILM 0.1uF	250V
⚠C103	1-164-143-11	CERAMIC 1000PF	
⚠C104	1-164-143-11	CERAMIC 1000PF	
⚠C105	1-164-143-11	CERAMIC 1000PF	
⚠C106	9-936-216-01	ELECT 68uF	400V
C107	1-124-791-11	ELECT 1uF	100V
C108	9-902-055-01	CERAMIC 100pF	1kV
C109	1-136-207-11	METALIZED FILM 0.047uF	400V
C110	1-130-491-00	PE TEREPHTHALATE 0.047uF	50V
C111	1-130-491-00	PE TEREPHTHALATE 0.047uF	50V
C112	1-162-599-12	PE TEREPHTHALATE 4700PF	
C113	1-162-599-12	PE TEREPHTHALATE 4700PF	
C114	1-162-599-12	PE TEREPHTHALATE 4700PF	
C201	1-126-964-51	ELECT 10uF	50V
C202	1-126-768-11	ELECT 2200uF	16V
C203	1-126-933-11	ELECT 100uF	16V
C204	1-126-927-11	ELECT 2200uF	10V
C205	1-126-925-11	ELECT 470uF	10V
C206	1-126-968-11	ELECT 100uF	50V
C207	1-126-916-11	ELECT 1000uF	6.3V
C208	1-124-903-11	ELECT 1uF	50V
C210	1-130-483-00	CAP, PE TEREPHTHALATE 0.01uF	50V
C211	1-130-483-00	CAP, PE TEREPHTHALATE 0.01uF	50V
		< CONNECTOR >	
⚠CN1	1-506-475-11	PIN, CONNECTOR 10P	
CN101	9-936-220-01	CONNECTOR 2P ASSY	
CN2	1-506-474-11	PIN, CONNECTOR 9P	

Ref. No.	Part No.	Description	Remark
		< DIODE >	
⚠D101	8-719-510-06	DIODE S1WB60	
⚠D102	8-719-312-26	DIODE EG01	
⚠D103	8-719-200-82	DIODE 11ES2	
⚠D104	8-719-109-63	DIODE RD3.0ES-B2	
⚠D105	8-719-912-20	DIODE 1SS120	
⚠D106	8-719-304-63	DIODE RM11C	
⚠D201	8-719-313-16	DIODE AU02A	
⚠D202	9-902-061-01	DIODE RG4Z	
⚠D203	8-719-200-82	DIODE 11ES2	
⚠D204	8-719-981-00	DIODE ERC81-004	
⚠D206	8-719-313-16	DIODE AU02A	
⚠D207	8-719-981-00	DIODE ERA81-004	
⚠D208	8-719-160-63	DIODE RD15FB3	
		< FUSE >	
⚠F101	1-532-203-00	FUSE, GLASS TUBE 2A/250V	
		< BEAD >	
FB-1	9-902-053-01	BEAD CORE EXCEL	
		< IC >	
⚠IC201	8-759-420-19	IC AN1431T	
		< COIL >	
⚠L101	9-936-214-01	LINE FILTER	
⚠L102	9-936-214-01	LINE FILTER	
L202	9-902-762-01	COIL 20uH	
L203	9-902-762-01	COIL 20uH	
		< PHOTO COUPLER >	
⚠PC101	8-749-923-89	PHOTO COUPLER PS2561	
		< TRANSISTOR >	
Q101	8-729-032-84	TRANSISTOR 2SC4231LMN	
⚠Q102	8-729-967-32	TRANSISTOR 2SC2673Q	
		< RESISTOR >	
⚠R101	1-202-719-00	SOLID 1M	1/2W
R102	1-247-883-00	CARBON 150K	1/4W
R103	1-247-883-00	CARBON 150K	1/4W
R104	1-247-863-31	CARBON 22K	1/4W
R105	1-247-883-00	CARBON 150K	1/4W
⚠R106	1-215-928-11	METAL OXIDE FILM 68K	3W
⚠R107	1-247-739-11	RES, CARBON 100	1/2W F
⚠R108	1-247-739-11	RES, CARBON 100	1/2W F
R109		Adjustable RESISTOR 560-820	

When indicating parts by reference number, please include the board.

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Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

POWER BLOCK RP-149

Ref. No.	Part No.	Description	Remark
⚠R110	9-936-218-01	CEMENT 4.7	2W F
⚠R201	1-247-727-11	RES, CARBON 10	1/2W F
⚠R202	1-247-727-11	RES, CARBON 10	1/2W F
⚠R203	1-212-857-00	RES, FUSE 10	1/4W
⚠R204	1-217-371-00	RES, FUSE 0.47	1/4W
R205	1-247-735-11	RES, CARBON 47	1/2W
R206	1-215-428-00	RES, METAL FILM 2K	1/4W
R207		Adjustable RESISTOR 10K	
R208		Adjustable RESISTOR 1.2K-1.8K	
		< VARIABLE RESISTOR >	
VR201	9-902-761-01	VARIABLE 200	
		< TRANSFORMER >	
⚠T101	9-936-213-01	SWITCHING TRANSFORMER	

Ref. No.	Part No.	Description	Remark
*	A-6727-509-A	RP-149 BOARD, COMPLETE (SVO-1500)	
*	A-6727-510-A	RP-149 BOARD, COMPLETE (SVO-1500P) ***********************	
		(Ref. No. 6,000 Series)	
	3-952-201-01	CASE (LID), SHIELD, RP	
		< CAPACITOR >	
C260	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C261	1-124-584-00	ELECT 100uF 20%	10V
C262	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C263	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C264	1-124-257-00	ELECT 2.2uF 20%	50V
C265	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C267	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C267	1-162-306-11	CERAMIC 0.01uF 20% 16V	(SVO-1500)
C270	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C273	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C274	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C275	1-126-160-11	ELECT 1uF 20%	50V
C276	1-162-306-11	CERAMIC 0.01uF 20%	16V
C277	1-163-234-11	CERAMIC CHIP 20PF 5% 50V	(SVO-1500P)
C277	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
C280	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C281	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C290	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C801	1-163-033-91	CERAMIC CHIP 0.022uF	50V
C802	1-163-033-91	CERAMIC CHIP 0.022uF	50V
C803	1-163-033-91	CERAMIC CHIP 0.022uF	50V
C804	1-163-077-91	CERAMIC CHIP 0.1uF	50V
C805	1-163-033-91	CERAMIC CHIP 0.022uF	50V
C806	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C807	1-163-038-91	CERAMIC CHIP 0.1uF	25V

Ref. No.	Part No.	Description	Remark
C808	1-124-584-00	ELECT 100uF 20%	10V
C809	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C810	1-124-584-00	ELECT 100uF 20%	10V
C811	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C812	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C813	1-124-252-00	ELECT 0.33uF 20%	50V
C814	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C815	1-163-077-91	CERAMIC CHIP 0.1uF	50V
C816	1-163-077-91	CERAMIC CHIP 0.1uF	50V
C817	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C818	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	(SVO-1500P)
C818	1-163-104-00	CERAMIC CHIP 30PF 5% 50V	(SVO-1500)
C819	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C820	1-163-111-00	CERAMIC CHIP 56PF 5% 50V	(SVO-1500P)
C820	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	(SVO-1500)
C821	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(SVO-1500P)
C822	1-163-003-11	CERAMIC CHIP 330PF 10%	50V
C823	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C824	1-124-589-11	ELECT 47uF 20%	16V
C825	1-163-099-00	CERAMIC CHIP 18PF 5%	50V
C826	1-124-589-11	ELECT 47uF 20%	16V
C827	1-163-038-91	CERAMIC CHIP 0.1uF	25V
C828	1-162-306-11	CERAMIC 0.01uF 20%	16V
C831	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	(SVO-1500P)
C832	1-162-306-11	CERAMIC 0.01uF 20%	16V
C833	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C834	1-163-222-11	CERAMIC CHIP 5PF 0.25PF 50V	(SVO-1500)
C835	1-163-109-00	CERAMIC CHIP 47PF 5%	50V
C836	1-163-099-00	CERAMIC CHIP 18PF 5%	50V
C837	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C838	1-124-589-11	ELECT 47uF 20% 16V	(SVO-1500P)
C839	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
C840	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C841	1-124-589-11	ELECT 47uF 20%	16V
C890	1-163-059-00	CERAMIC CHIP 0.01uF 10% 50V	(SVO-1500P)
C891	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(SVO-1500P)
		< CONNECTOR >	
* CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P	
CN802	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
* CN803	1-564-029-00	PIN, CONNECTOR 4P	
CN804	1-506-484-11	PIN, CONNECTOR 5P	
		< DIODE >	
D801	8-719-911-19	DIODE 1SS119	
D802	8-719-911-19	DIODE 1SS119	
D803	8-719-911-19	DIODE 1SS119	
D804	8-719-911-19	DIODE 1SS119	
D805	8-719-914-43	DIODE DAN202K-T-146	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
D806	8-719-914-43	DIODE DAN202K-T-146	

< IC >

Ref. No.	Part No.	Description	Remark
IC260	8-759-055-49	IC AN3327K	
IC801	8-759-046-75	IC HA118162NT	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR804	1-216-296-91	CONDUCTOR, CHIP (3216)	(SVO-1500)
JR811	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR812	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR813	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR814	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR815	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR816	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR817	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR818	1-216-296-91	CONDUCTOR, CHIP (3216)	(SVO-1500P)
JR819	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR820	1-216-296-91	CONDUCTOR, CHIP (3216)	(SVO-1500P)
JR821	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR823	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR824	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR825	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR826	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR827	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR828	1-216-295-91	CONDUCTOR, CHIP (2012)	
JR829	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR830	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR831	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR832	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR834	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR835	1-216-296-91	CONDUCTOR, CHIP (3216)	
JR837	1-216-296-91	CONDUCTOR, CHIP (3216)	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JW812	1-247-807-31	CARBON 100 5% 1/4W	(SVO-1500P)

< COIL >

Ref. No.	Part No.	Description	Remark
L260	1-414-189-31	INDUCTOR 100uH	
L261	1-414-187-11	INDUCTOR 47uH	
L801	1-410-525-11	INDUCTOR 220uH	
L802	1-410-525-11	INDUCTOR 220uH	
L803	1-414-189-31	INDUCTOR 100uH	
L804	1-414-189-31	INDUCTOR 100uH	
L806	1-410-515-11	INDUCTOR 33uH	(SVO-1500P)
L806	1-410-516-11	INDUCTOR 39uH	(SVO-1500)
L807	1-410-516-11	INDUCTOR 39uH	(SVO-1500P)
L807	1-410-518-41	INDUCTOR 56uH	(SVO-1500)
L808	1-410-511-11	INDUCTOR 15uH	(SVO-1500P)
L809	1-410-511-11	INDUCTOR 15uH	(SVO-1500P)
L809	1-410-512-11	INDUCTOR 18uH	(SVO-1500)
L810	1-414-192-31	INDUCTOR 180uH	
L811	1-414-189-31	INDUCTOR 100uH	
L812	1-414-189-31	INDUCTOR 100uH	
L813	1-410-509-11	INDUCTOR 10uH	(SVO-1500P)
L814	1-414-189-31	INDUCTOR 100uH	(SVO-1500P)
L815	1-410-509-11	INDUCTOR 10uH	
L816	1-410-509-11	INDUCTOR 10uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q801	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(SVO-1500P)
Q802	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q803	8-729-424-18	TRANSISTOR UN2113	
Q804	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q805	8-729-216-22	TRANSISTOR 2SA1162	
Q806	8-729-216-22	TRANSISTOR 2SA1162	
Q807	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q808	8-729-421-19	TRANSISTOR UN2213	
Q809	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q810	8-729-421-19	TRANSISTOR UN2213	
Q811	8-729-301-98	TRANSISTOR 2SB1000A-L	
Q814	8-729-421-19	TRANSISTOR UN2213	
Q815	8-729-421-19	TRANSISTOR UN2213	(SVO-1500P)
Q816	8-729-424-18	TRANSISTOR UN2113	(SVO-1500P)
Q817	8-729-421-19	TRANSISTOR UN2213	(SVO-1500P)
Q818	8-729-421-19	TRANSISTOR UN2213	(SVO-1500P)
Q820	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(SVO-1500P)
Q821	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(SVO-1500P)
Q828	8-729-421-19	TRANSISTOR UN2213	
Q829	8-729-421-19	TRANSISTOR UN2213	(SVO-1500)
Q839	8-729-421-19	TRANSISTOR UN2213	(SVO-1500P)

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R262	1-216-035-00	METAL CHIP 270 5% 1/10W	
R263	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R265	1-216-033-00	METAL CHIP 220 5% 1/10W	
R266	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R267	1-216-035-00	METAL CHIP 270 5% 1/10W	
R271	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R272	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R290	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R801	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R802	1-216-037-00	METAL CHIP 330 5% 1/10W	
R803	1-216-025-91	METAL GLAZE 100 5% 1/10W	(SVO-1500P)
R805	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500P)
R806	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R807	1-216-025-91	METAL GLAZE 100 5% 1/10W	

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
R808	1-211-955-11	METAL GLAZE 13 0.50% 1/10W	(SVO-1500P)
R808	1-211-954-11	METAL GLAZE 12 0.50% 1/10W	(SVO-1500)
R809	1-208-752-11	METAL GLAZE 56 0.50% 1/10W	(SVO-1500P)
R809	1-208-755-11	METAL GLAZE 75 0.50% 1/10W	(SVO-1500)
R810	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R811	1-216-037-00	METAL CHIP 330 5% 1/10W	
R812	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R813	1-216-047-91	METAL GLAZE 820 5% 1/10W	
R815	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R816	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R817	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R818	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R819	1-216-198-91	METAL GLAZE 1K 5% 1/8W	
R820	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R821	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R822	1-216-039-00	METAL CHIP 390 5% 1/10W	
R823	1-216-047-91	METAL GLAZE 820 5% 1/10W	
R824	1-216-039-00	METAL CHIP 390 5% 1/10W	
R825	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R826	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	
R827	1-216-045-00	METAL CHIP 680 5% 1/10W	
R828	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R829	1-216-041-00	METAL CHIP 470 5% 1/10W	(SVO-1500P)
R830	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R830	1-216-046-00	METAL CHIP 750 5% 1/10W	(SVO-1500)
R831	1-216-045-00	METAL CHIP 680 5% 1/10W	(SVO-1500P)
R831	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	(SVO-1500)
R833	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R834	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R838	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R839	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R840	1-249-421-11	CARBON 2.2K 5% 1/4W	
R841	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SVO-1500P)
R843	1-216-037-00	METAL CHIP 330 5% 1/10W	(SVO-1500P)
R845	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R845	1-216-047-91	METAL GLAZE 820 5% 1/10W	(SVO-1500)
R846	1-249-429-11	CARBON 10K 5% 1/4W	(SVO-1500P)
R847	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	(SVO-1500P)
R848	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	(SVO-1500P)
R849	1-216-045-00	METAL CHIP 680 5% 1/10W	(SVO-1500P)
R850	1-216-043-91	METAL GLAZE 560 5% 1/10W	(SVO-1500P)
R851	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R852	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(SVO-1500P)
R870	1-249-429-11	CARBON 10K 5% 1/4W	
R871	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(SVO-1500)
R885	1-216-198-91	METAL GLAZE 1K 5% 1/8W	(SVO-1500P)
R885	1-216-296-91	CONDUCTOR, CHIP (3216)	(SVO-1500)
R887	1-216-296-91	CONDUCTOR, CHIP (3216)	
R888	1-216-295-91	CONDUCTOR, CHIP (2012)	(SVO-1500)
R891	1-249-417-11	CARBON 1K 5% 1/4W	(SVO-1500P)

MISCELLANEOUS
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Ref. No.	Part No.	Description	Remark
60	1-572-662-11	SWITCH, ROTARY (SHUTTLE RING)	
217	8-848-555-01	DRUM ASSY DZR-37-R (SVO-1500)	
217	8-848-622-01	DRUM ASSY DZR-66-R (SVO-1500P)	
RF701	1-466-989-11	MODULATOR, RF (SVO-1500)	
M901	A-6709-721-A	DRUM ASSY DZH-58A(K)-R (SVO-1500)	
M901	8-848-619-11	DRUM ASSY DZH-66A-R (SVO-1500P)	
⚠M902	3-947-028-01	MOTOR (CAPSTAN)	
M903	3-946-917-01	MOTOR ASSY, L (LOADING)	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-467-366-11	REMOTE CMMANDER (RMT-V139A) (SVO-1500)	
	1-467-366-21	REMOTE CMMANDER (RMT-V139) (SVO-1500P)	
⚠	1-534-827-14	CORD, POWER (SVO-1500)	
⚠	1-590-910-11	CORD SET, POWER (SVO-1500P)	
	1-696-592-11	CORD, CONNECTION (NTSC) (SVO-1500) (ANTENA CORD CABLE) (1.5m)	
	3-798-893-21	MANUAL INSTRUCTION (ENGLISH/FRENCH) (SVO-1500)	
	3-798-894-21	MENUAL INSTRUCTION (ENGLISH/FRENCH/GERMAN/SPANISH/ITALIAN) (SVO-1500P)	
*	3-955-870-02	CUSHION (UPPER)	
*	3-955-871-02	CUSHION (LOWER)	
*	3-962-193-31	INDIVIDUAL CARTON (SVO-1500P)	
*	3-962-193-41	INDIVIDUAL CARTON (SVO-1500)	
	4-959-044-01	COVER, BATTERY (RMT-V139A) (SVO-1500)	
	4-959-366-21	COVER, BATTERY (RMT-V139) (SVO-1500P)	

****
HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-685-648-79	SCREW +BVTP 3×12 TYPE2 IT-3	
#2	7-621-773-86	SCREW +PTT 2.6×4 (S)	
#3	7-621-770-87	SCREW +PTT 2.6×5 (S)	
#5	7-682-547-04	SCREW +PTT 3×6 (S)	
#6	7-685-646-79	SCREW +BVTP 3×8 TYPE2 IT-3 (SVO-1500P)	

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREADING	TAPE UNTHREADING	STOP	FF	REW	PB	PB PAUSE	SLOW	X2	CUE	REVIEW	REC	REC PAUSE
CAM M	MA-246 Board IC501 (91)	O	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L
CAM P	MA-246 Board IC501 (92)	O	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L
MODE 1	MA-246 Board IC501 (58)	I	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H
MODE 2	MA-246 Board IC501 (57)	I	L	H	L	L	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-246 Board IC501 (56)	I	H	H	H	L	H	H	H	H	L	L	L	L	L	L	L	L
MODE 4	MA-246 Board IC501 (55)	I	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
C-OUT	MA-246 Board IC501 ㉓	I	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
C-START	MA-246 Board IC501 ㉔	I	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H
C-IN	MA-246 Board IC501 ㉕	I	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
REC SAF	MA-246 Board IC501 ㉖	I	L	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1	* 1
T REEL FG	MA-246 Board IC501 ⑳	I	H/L	H/L	H/L	H/L	H/L	H/L	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2
S REEL FG	MA-246 Board IC501 ⑲	I	H/L	H/L	H/L	* 2	* 2	H/L	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2	* 2
END LED	MA-246 Board IC501 ㊲	O	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3
CAP TRQ1	MA-246 Board IC501 ㉟	O	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP TRQ2	MA-246 Board IC501 ㊱	O	H	H	H	H	H	H	H	H	H	H	* 4	H	H	H	H	H
$\overline{\text{CAP STOP}}$	MA-246 Board IC501 ㊳	O	L	* 5	* 5	* 5	* 5	L	* 5	* 5	* 5	* 5	* 5	* 5	* 5	* 5	* 5	* 5
T SENS	MA-246 Board IC501 (63)	I	* 3	* 3	* 3	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6
S SENS	MA-246 Board IC501 (64)	I	* 3	* 3	* 3	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6

* 1. "L" When erasing protection tab is bent. "H" When not bent.

* 2. Pulse of period in proportion to reel rotating speed.

* 3. Approx. 2msec period "H" pulse.

* 4. Pulse

* 5. 3 value output of "H", "L" and "Hi-Z (2.5V)"

* 6. Normally "L" 2msec period "H" pulse when tape top or tape end is detected

7-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UN-THREAD-ING	PB	PB PAUSE	SLOW	X2	CUE	REVIEW	REC	REC PAUSE
REC CTL	MA-246 Board IC501 ⑦	O	* 14	* 14	* 14	* 14	* 14	* 14	* 14	* 14	* 14	* 14	* 14	* 1	* 14
STEP PLS	MA-246 Board IC501 ⑭	O	L	* 2	* 2	* 2	* 2	* 2	L	* 2	* 2	* 2	* 2	* 2	L
RF SW POSI * 4	MA-246 Board IC501 (62)	I													
$\overline{\text{PB CTL}}$	MA-246 Board IC501 (67)	I	H	* 5	* 5			* 1	H/L	* 3	* 5	* 5	* 5	* 1	H
VD CTL	MA-246 Board IC501 (77)	I	H	* 5	* 5			* 1	H/L	* 3	* 5	* 5	* 5	* 1	H
DRUM PG	MA-246 Board IC501 (68)	I	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6	* 6
DRUM FG	MA-246 Board IC501 (69)	I	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7	* 7
CAP FG	MA-246 Board IC501 (70)	I	H/L	* 8	* 8	* 9	* 9	* 8	H/L	* 10	* 8	* 8	* 8	* 8	H/L
CAP RVS	MA-246 Board IC501 (72)	O	H/L	L	H	L	H	L	L	* 3	L	L	H	L	L
CAP D/A *14	MA-246 Board IC501 (73)	O	* 11	* 11	* 11	* 11	* 11	* 12	* 11	* 11	* 12	* 12	* 12	* 12	* 11
DRUM D/A * 14	MA-246 Board IC501 (74)	O	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13	* 13
CTL STEP	MA-246 Board IC501 (76)	O	L	L	L	L	L	L	L	* 15	L	L	L	L	L
AF SW POSI * 16	MA-246 Board IC501 (51)	I													

- * 1. PAL : 25Hz pulse. NTSC : 30Hz pules
- * 2. 3 value output of "H" , "L" and Hi-Z (2.5V)
- * 3. Unstable period Pulse.
- * 4. Input terminal for video switching position adjustment.
- * 5. Pulse of period in proportion to tape speed.
- * 6. PAL : 25Hz pulse. NTSC : 30Hz pulse.
- * 7. PAL : 600Hz pulse. NTSC : 720Hz pulse.
- * 8. Pulse of period in proportion to tape speed.
- * 9. Unstable period Pulse.
- * 10. Pulse at tape running.
- * 11. Approx. 2msec period "H" or "L" pulse.
- * 12. Approx. 1.5msec period "H" or "L" pulse.
- * 13. Approx. 3msec period "H" or "L" pulse.
- * 14. Hi-Z (2.5V)
- * 15. "H" when FWD direction and STEP drive.
- * 16. Input terminal for HiFi Audio switching position adjustment.

7-3. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	I/O level
$\overline{\text{COSMO}\cdot\text{RESET}}$	MA-246 Board IC501 ㊵	I	Normally "H" . "L" when service interruption is detected or restored.
$\overline{\text{COSMO}\cdot\text{CS}}$	MA-246 Board IC501 ㊹	I	Chip select signal from timer microprocessor. V period "L" pules.
SI • BUS	MA-246 Board IC501 ㊺	I	Serial communication data to timer microprocessor. V period "L" pules.
SO • BUS	MA-246 Board IC501 ㊻	O	Serial communication data to timer microprocessor. V period "L" pules.
$\overline{\text{S CLK}}$	MA-246 Board IC501 ㊼	I	Serial communication clock with timer microprocessor. V period "L" pules.

7-4. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECT BLOCK INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	I/O level
ANT TV	MA-246 Board IC501 ㉘	O	"L" when RF modulator through.
LINE SEL1	MA-246 Board IC501 ㉙	O	Input selector control signal. *1
LINE SEL2	MA-246 Board IC501 ㉚	O	Input selector control signal. *2

*1

Input Signal	LINE 1	LINE 2
LINE SEL1 ㉙	H	L
LINE SEL2 ㉚	L	H

7-5. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	STOP/ FF/REW	TAPE THREAD-ING	TAPE UN-THREAD-ING	PB	PB PAUSE	SLOW	X2	CUE	REVIEW	REC	REC PAUSE
$\overline{\text{V·PB}}$	MA-246 Board IC501 (96)	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-246 Board IC501 (85)	O	L	L	L	L	Hi-Z (2.5V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-246 Board IC501 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-246 Board IC501 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-246 Board IC501 ⑩	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
$\overline{\text{EP}}$	MA-246 Board IC501 ㉒	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
LP	MA-246 Board IC501 ⑪	O	*13	*13	*13	*7	*7	*7	*7	*7	*7	*13	*13
REC·P	MA-246 Board IC501 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-246 Board IC501 ⑥	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-246 Board IC501 (66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
OSD MUTE	MA-246 Board IC501 (97)	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
EDIT	MA-246 Board IC501 (94)	O	*11	*11	*11	*14	*14	*14	*14	*14	*14	*11	*11
E TAPE	MA-246 Board IC501 ㉗	O	H	H	H	*15	*15	*15	*15	*15	*15	H	H
RENTAL	MA-246 Board IC501 ㉑	O	L	L	L	*16	*16	*16	*16	*16	*16	L	L
NTSC/$\overline{\text{PAL}}$	MA-246 Board IC501 ⑰	O	*17	*17	*17	*18	*18	*18	*18	*18	*18	*17	*17
3.58NTSC	MA-246 Board IC501 ⑱	O	*19	*19	*19	*20	*20	*20	*20	*20	*20	*19	*19
3.58/ 4.43NTSC	MA-246 Board IC501 ⑮	O	*17	*17	*17	*21	*21	*21	*21	*21	*18	*17	*17
JOG	MA-246 Board IC501 ⑬	O	L	L	L	L	H	H	H	H	H	L	L
ORC ON	MA-246 Board IC501 ㉞	O	L	L	L	L	L	L	L	L	L	*22	*22

- *1. Foward slow mode : "Hi-Z (2.5V)" in tape stop. "L" in tape running (approx. 40msec.).
  Foward slow mode : "Hi-Z (2.5V)" in tape stop. "H" in tape running SP mode (approx. 40msec.).
  "H" in tape running EP mode (approx. 40msec.).
- *2. Synchronized with drum rotation. NTSC : 30Hz 50% duty pulse, PAL : 25Hz 50% duty pulse
- *3. Normally "L" . "H" when CTL signal in not generated.
- *4. V period "H" pules.
- *5. "H" in SP mode. "L" in EP mode.
- *6. Selected by REC mode. SP mode "L" .
- *7. Selected by tape recording mode.

Model / Signal	SP	LP	EP
$\overline{\text{SP}}$ ⑩	L	H	H
EP ㉒	L	L	H
LP ⑪	L	H	L

- *8. Composite Sync signal (Positive).
- *9. "H" when menu screen or blue back screen.
- *10. "Hi-Z (2.5V)" in EP mode. "H" SP mode.
- *11. Selected by "PICTURE SW" : "H" in EDIT position.
- *12. Selected by "REC" mode : "H" EP mode.
- *13. Selected by "REC" mode : "H" LP mode.
- *14. Selected by "PICTURE SW" : "H" in EDIT position. "H" When "E TAPE" is "H" (Euro model. PAL PB).
- *15. "L" when APC is off. "H" when APC is ON and "HG tape" is used.
- *16. Selected by "PICTURE SW" : "H" in RENTAL position or "H" When Low grade tape is used in APC ON mode.
- *17. "H" When input signal is NTSC mode. (GA-PAL model) (Euro- PAL model).
  "H" When input signal is NTSC mode. (NTSC model).
- *18. Selected by "Color system SW" : "H" in NTSC mode. (GA-PAL. Euro- PAL model).
  "H" (NTSC model).
- *19. "H" When input signal is NTSC 3.58 mode. (GA-PAL model)
  "L"(Euro- PAL, NTSC model).
  (GA-PAL model) (Euro- PAL model).
- *20. Selected by "NTPB SW" : "H" in NTSC 3.58 position.
- *21. Selected by "NTPB SW" : "H" in NTSC 3.58 or 4.43 position.
- *22. "H" during APC measurement.

7-6. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-246 BOARD IC501)

Signal	Pin No.	I/O	STOP/ FF/REW	TAPE LOADING	TAPE UN-THREAD-ING	PB	PB PAUSE	SLOW	X2	CUE	REVIEW	REC	REC PAUSE
NA PB	MA-246 Board IC501 (91)	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-246 Board IC501 (95)	O	L	L	L	L	H	H	H	H	H	L	L
NA REC P	MA-246 Board IC501 (93)	O	L	L	L	L	L	L	L	L	L	H	L
$\overline{\text{SP}}$	MA-246 Board IC501 ⑩	O	* 1	* 1	* 1	* 2	* 2	* 2	* 2	* 2	* 2	* 1	* 1
AF PB	MA-246 Board IC501 (99)	O	L	L	L	H	H	H	H	H	H	L	L
$\overline{\text{HIFI}}$/MIN	MA-246 Board IC501 (83)	I/O	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3
STEREO/L/$\overline{\text{R}}$	MA-246 Board IC501 (81)	I/O	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3	* 3
AF SWP	MA-246 Board IC501 (100)	O	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4	* 4
AF REC $\overline{\text{P}}$	MA-246 Board IC501 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SW POSI	MA-246 Board IC501 (51)	I	Input terminal for AF switching position adjustment										
$\overline{\text{FULL ERS}}$	MA-246 Board IC501 ㉛	O	H	H	H	H	H	H	H	H	H	L	H

* 1. Selected by REC mode selector. SP mode : "L" , EP mode "H" .
* 2. Selected by tape recording mode. SP mode : "L" , EP mode "H" .
* 3.

Audio Monitor / Signal	STEREO OR MAIN, SUB, L, R	MAINL	SUB R	(NORMAL)	HiFi Mix
$\overline{\text{HIFI}}$/MIN	L	L	L	H	M (Hi-Z)
STEREO/L/$\overline{\text{R}}$	H	M (Hi-Z)	L	X	H

* 4. Synchronized with drum rotation 30Hz 50% duty pulse.

7-7. SERVO/SYSTEM CONTROL – MICROPROCESSOR PIN FUNCTION (MA-246 BOARD IC501)

Pin No.	Port	I/O	Name	Function
1	PB5/PPO13	O	RF SWP	Video switching pulse output
2	PB4/PPO12	O	QVD	Quasi VD pulse output
3	PB3/PPO11	O	Q HD ENABLE	Quasi HD control
4	PB2/PPO1	O	AF REC $\overline{P}$	"H" output when HiFi Audio REC
5	PB1/PPO9	O	REC ·P	"H" output when video REC (RED control)
6	PB0/PPO8	O	REC	"H" output when REC
7	PC7/PTO7	O	REC CTL	REC CTL output
8	PC6/PTO6	O	INT VD	Not used
9	PC5/PTO5	I	NT JUDGE	3.58/4.43NTSC judgement input
10	PC4/PTO4	O	$\overline{SP}$	"L" when SP mode
11	PC3/PTO3	O	LP	"H" when LP mode
12	PC2/PPO18	O	ENV GAIN	"H" when EP mode
13	PC1/PTO17	O	JOG	"H" when special playback
14	PC0/PTO16	O	STEP PLS	"H" when capstan STEP is driven
15	PJ7	O	3.58/4.43 NTSC	Video system select signal. "H" when 3.58 or 4.43 NTSC PB
16	PJ6	O	$\overline{HEDT}$	H sync detection input
17	PJ5	O	NTSC/$\overline{PAL}$	"H" when NTSC mode
18	PJ4	O	3.58NTSC	"H" when 3.58 NTSC PB
19	PJ3	I	S REEL FG	S reel sensor input
20	PJ2	I	T REEL FG	T reel sensor input
21	PJ1	O	RENTAL	"H" when NOISE REDUCTION
22	PJ0	I	$\overline{EP}$	"L" when EP mode REC/PB
23	PD7	I	C-OUT	Casette switch input
24	PD6	I	C-START	
25	PD5	I	C-IN	
26	PD4	I	REC SAF	Erasing protection tab detection
27	PD3	O	E TAPE	HiFi audio system control signal
28	PD2	O	ANT TV	Antenna output select signal "H" : VTR, "L" : TV
29	PD1	O	LINE SEL1	Video/audio input select signal
30	PD0	O	LINE SEL2	Video/audio input select signal
31	PH7	O	$\overline{FULL\ ERS}$	"L" when full erase head operation
32	PH6	O	PAL	RF level detect signal output
33	PH5	O	AMS MUTE	Not used
34	PH4	O	ORC ON	Not used
35	PH3	O	CAP TRQ1	Current drive capstan motor control
36	PH2	O	CAP TRQ2	
37	PH1	O	END LED	End sensor lamp drive output
38	PH0	O	$\overline{CAP\ STOP}$	Capstan stop signal output
39	MP	I	MP	Fixed "L" level
40	$\overline{RST}$	I	$\overline{COSMO\ RESET}$	System reset input
41	V_{ss}		V_{ss}	GND
42	XTAL	O	XTAL	System clock 12MHz
43	EXTAL	I	EXTAL	
44	$\overline{CSO}$	O	$\overline{COSMO\ CS}$	Chip select signal
45	SIO	I	SI BUS	Signal for serial communication
46	SO0	O	SO BUS	Signal for serial communication
47	$\overline{SCK0}$	O	$\overline{S\ CLK}$	Clock for serial communication
48	PF7/AN11	I	METER R	Level meter signal input
49	PF6/AN10	I	METER L	
50	PF5/AN9	I	DEST	Destination selection Fixed at "L"
51	PF4/AN8	O	AF SW POSI	VR input for HiFi Audio RF SWP adjustment
52	AV_{ss}		AV_{ss}	UNSW GND
53	AV_{REF}		AV_{REF}	AD port reference input AN5V
54	AV_{DD}		AV_{DD}	AN5V
55	PF3/AN7	I	MODE4	Mechanism section CAM encoder input
56	PF2/AN6	I	MODE3	
57	PF1/AN5	I	MODE2	
58	PF0/AN4	I	MODE1	
59	AN3	I	NT PB SW	NTSC 4.43/3.58/PAL mode select signal input
60	AN2	I	RF ENV	Video RF envelope input
61	AN1	I	AF ENV	HiFi Audeo RF envelope input
62	AN0	I	RF SW POSI	VR input for RF SWP adjustment
63	PG7/EXT1	I	T SENS	Take-up side end sensor input
64	PG6/EXT0	I	S SENS	Supply side end sensor input
65	PG5/SYNC1	I	N.C.	Not used
66	PG4/SYNC0	I	V SYNC	Composite sync input
67	PG3/PBCTL	I	PB CTL	Playback CTL input
68	PG2/DPG	I	DRUM PG	Drum PG input
69	PG1/DFC	I	DRUM FG	Drum FG input
70	PG0/CFG	I	CAP FG	Capstam FG input
71	PE7/DAB1	O	INPUT MUTE	Not used
72	PE6/DAB0	O	CAP RVS	Capstan reverse signal output
73	PE5/DAA1	O	CAP D/A	Capstan error D/A output
74	PE4/DAA0	O	DRUM D/A	Drum error D/A output
75	PE3/PWN1	O	$\overline{REC\ INH}$	CTL amp REC inhibit
76	PE2/PWN0	O	CTL STEP	CTL amp step action control
77	PE1/EC/INT	I	VD CTL	Playback CTL input
78	PE0/INT0	I	AMS	AMS control input
79	P17/SI1	O	CHOI REV	Not used
80	P16/SO1	O	EXP SO	Not used
81	P15/SCK1	O	NTSC/$\overline{PAL}$	NTSC/PAL select signal output "H" when NTSC mode
82	P14/INT1	I	N.C.	Not used
83	P13/T0	I	$\overline{HIFI}$/M/N	Audio mode detect output
84	P12/PWM	O	STEREO/L/$\overline{R}$	Audio mode output during playback
85	P11/RMC	O	HEAD CONT	Head amp IC control
86	TEX	I	N.C.	Fixed "L" level
87	TX		N.C.	Not used
88	V_{ss}		V_{ss}	GND
89	V_{DD}		V_{DD}	AN5V
90	N.C.		N.C.	Not used

Pin No.	Port	I/O	Name	Function
91	PA7/PPO7	O	CAM M	Loding motor control
92	PA6/PPO6	O	CAM P	
93	PA5/PPO5	O	NA REC$\overline{\text{P}}$	"H" when audio recording
94	PA4/PPO4	O	NA PB	"H" when audio playback
95	PA3/PPO3	O	A MUTE	Audio muting output "H" : muting
96	PA2/PPO2	O	$\overline{\text{V·PB}}$	"L" when video playback
97	PA1/PPO1	O	OSD MUTE	Compulsion blue back "H" blue back Not used
98	PA0/PPO0	O	CTL INDEX	CTL amp index mode select signal
99	PB7/PTO15	O	AF PB	"H" when HiFi Audio playback
100	PB6/PTO14	O	AF SWP	HiFi Audio switching pulse output

7-8. MODE CONTROL – MICROPROCESSOR PIN FUNCTION (MF-278 BOARD IC101)

Pin No.	Port	I/O	Name	Function
1	S4/PG0	O	N.C.	Not used
2	S5/PG1	O	N.C.	Not used
3	S6/PG2	O	N.C.	Not used
4	S7/PG3	O	REMOTE INH	Remote INHIBIT control signal
5	S8/PK0	O	S1	Display segment signal 1
6	S9/PK1	O	S2	Display segment signal 2
7	S10/PK2	O	S3	Display segment signal 3
8	S11/PK3	O	S4	Display segment signal 4
9	S12/PJ0	O	S5	Display segment signal 5
10	S13/PJ1	O	S6	Display segment signal 6
11	S14/PJ2	O	S7	Display segment signal 7
12	S15/PJ3	O	S8	Display segment signal 8
13	S16/T15	O	S9	Display segment signal 9
14	S17/T14	O	S10	Display segment signal 10
15	S18/T13	O	S11	Display segment signal 11
16	S19/T12	O	S12	Display segment signal 12
17	S20/T11	O	S13	Display segment signal 13
18	S21/T10	O	S14	Display segment signal 14
19	S22/T9	O	N.C.	Not used
20	S23/T8	O	N.C.	Not used
21	T7	O	N.C.	Not used
22	T6	O	G5	Display timing signal 7
23	T5	O	G4	Display timing signal 6
24	T4	O	G3	Display timing signal 5
25	T3	O	G2	Display timing signal 4
26	T2	O	G1	Display timing signal 3
27	T1	O	N.C.	Not used
28	T0	O	N.C.	Not used
29	INT	I	GND	GND
30	TX	O	TX	Clock for back-up 32.768kHz (no connection)
31	TEX	I	ETX	Clock for back-up 32.768kHz (Fixed at "L")
32	RST	I	$\overline{\text{RESET}}$	Reset signal input
33	N.C.		V_{DD}	Connected to 5V power
34	V_{DD}		V_{DD}	5V power
35	PI0/AD0	O	RING0	KEY input *1, *2
36	PI1/AD1	O	RING1	KEY input *1, *2
37	PI2/AD2	O	RING2	KEY input *1, *2
38	PI3/AD3	O	RING3	KEY input *2
39	PB0/AD4	O	KEY0	KEY input *2
40	PB1/AD5	O	KEY1	KEY input *2
41	PB2/AD6	O	KEY2	KEY input *2
42	PB3/AD7	I	KEY3	KEY input *2
43	$\overline{\text{EC}}$	I	$\overline{\text{EC}}$	Not used
44	PX0/$\overline{\text{SC}}$	O	$\overline{\text{S}}$ CLOCK	Serial communication clock
45	PX1/$\overline{\text{SO}}$	O	SI BUS	Serial data output

Pin No.	Port	I/O	Name	Function
46	PX2/SI	O	SO BUS	Serial data input
47	PA0	O	CG CS	CG microprocessor chip select signal
48	PA1	O	COSMO CS	SS microprocessor chip select signal
49	PA2	O	COSMO RESET	SS microprocessor reset signal output
50	PA3	I	FWD/RVS	Shuttle ring input *1
51	PF0	O	N.C.	Not used
52	PF1	O	N.C.	Not used
53	PF2	O	N.C.	Not used
54	PF3	O	N.C.	Not used
55	PE0	I	DAYLIGHT SAVING	SUMMER TIME select input
56	PE1	I	AUDIO MIX	HiFi MIX input
57	PE2	I	GND	GND
58	PE3	I	GND	GND
59	PYO	O	N.C.	Not used
60	PY1/PWM	O	BUZZER OUT	BUZZER control signal
61	PY2/WP	O	POWER FAIL	"L" when service interruption
62	PY3/RMC	O	SIRCS IN	Remote control input
63	PD0	O	POWER ON	Power supply control signal
64	PD1	O	POWER ON MUTE	Power on mute signal output
65	PD2	O	N.C.	Not used
66	PD3	O	N.C.	Not used
67	PC0	I	ALARM REC	ALARM REC input
68	PC1	I	MODEL H/L	Model HI/LOW judgement input switch
69	PC2	I	NTSC/PAL	NTSC/PAL judgement input switch
70	PC3	I	POWER ON STANDBY	POWER ON STANDBY control signal
71	Vss		Vss	GND
72	XTAL	O	XTAL	Clock 4.19MHz
73	N.C.		VDD	No connection
74	EXTAL	I	EXTAL	Clock 4.19MHz
75	VREF		VREF	A/D input reference power (+5V)
76	VFDP		VFDP	Power for fluorescent indicator (− 30V)
77	S0/PH0	O	N.C.	No connection
78	S1/PH1	O	N.C.	No connection
79	S2/PH2	O	REC	REC LED
80	S3/PH3	O	AUDIO DUB	AUDIO DUB LED

*1. Shuttle ring position and terminal input level

<table>
<tr><th rowspan="2">Shuttle ring position</th><th colspan="3">REW</th><th colspan="8">STOP</th><th colspan="3">FF</th></tr>
<tr><th colspan="2">REVIEW</th><th>− X2</th><th>− X1</th><th colspan="2">− 1/5</th><th colspan="2">PLAY/ STILL</th><th colspan="2">1/5</th><th>x1</th><th>X2</th><th colspan="2">CUE</th></tr>
<tr><td>AD0 ㉟ (RING 0)</td><td colspan="2">L</td><td>L</td><td>H</td><td colspan="2">H</td><td colspan="2">H</td><td colspan="2">H</td><td>H</td><td>L</td><td colspan="2">L</td></tr>
<tr><td>AD1 ㊱ (RING 1)</td><td>H</td><td>L</td><td>H</td><td>H</td><td colspan="2">L</td><td colspan="2">H</td><td colspan="2">L</td><td>H</td><td>H</td><td>L</td><td>H</td></tr>
<tr><td>AD2 ㊲ (RING 2)</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td colspan="2">H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td></tr>
<tr><td>FWD/RVS (50)</td><td colspan="7">L</td><td colspan="7">H</td></tr>
</table>

*2. Pressed key and terminal input voltage

Input voltage / Input terminal	0V	1.1V	2.1V	3.1V	4.1V	5.5V
AD7 (42)	COLOR SYSTEM (PAL position)		COLOR SYSTEM (NTSC position)			COLOR SYSTEM (AUTO position)
AD6 (41)	TV/VTR	INPUT SELECT				No Key input
AD5 (40)	REC			AUDIO DUB		No Key input
AD4 ㊴	POWER	EJECT				No Key input
AD3 ㊳	STOP	PLAY				No Key input
AD2 ㊲	Shuttle ring RING 2	PAUSE				No Key input
AD1 ㉞	Shuttle ring RING 1					No Key input
AD0 ㉟	Shuttle ring RING 0					No Key input

SECTION 8
ELECTRICAL ADJUSTMENTS

SVO-1500 (NTSC)

During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 8-16.

Necessary items and indications for total adjustment of electric circuit of this unit will be described in this chapter.

[Instruments to be Used]

1) Color TV
2) Single or dual trace type oscilloscope, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (4 digits or more)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion meter
10) Alignment tape
    Part code : 8-192-605-32 (KRV-51N2)

[Connection]

Unless otherwise specified, connect and adjust the measurement equipment as follows.

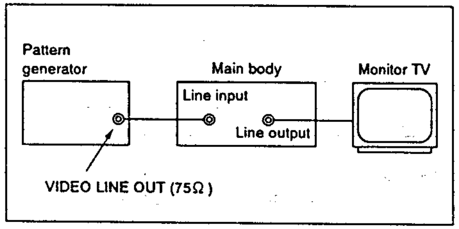

Pattern generator
Main body
Monitor TV
Line input
Line output
VIDEO LINE OUT (75Ω)

Fig. 8-1.

[Set-up for Adjustment]

The video signal from the pattern generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscope to the video input terminal on the MA-246 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3V, respectively, and that the level ratio of the burst signal and "red signal" are 0.30 : 0.66. Fig. 8-2. shows video signals (color bars) used in adjusting the electrical adjustment.

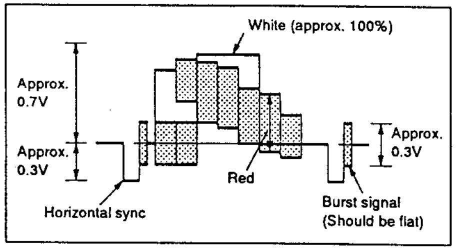

White (approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync
Burst signal (Should be flat)

Fig. 8-2. Color bar signal of pattern generator

[Alignment Tape (KRV-51N2)]

	Mode	Time	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	Seven minutes	Color bar	400Hz	400Hz
2		Three minutes	Monoscope		
3	EP	Seven minutes	Color bar		
4		Three minutes	Monoscope		

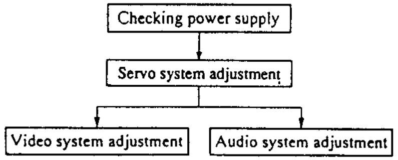
〔Specified Input/Output Level Impedance〕

Input/output terminal

VIDEO LINE IN	Phono jack *Input signal:* 1 Vp-p, 75Ω, unbalanced, Sync negative
VIDEO LINE OUT	Phono jack Output signal: 1 Vp-p, 75Ω, unbalanced, Sync negative
AUDIO LINE IN	Phono jack Input level: −7.5 dBs (0 dBs = 0.775 Vrms) Input impedance: More than 47 kΩ
AUDIO LINE OUT	Phono jack Standard output: −7.5 dBs At 47 kΩ loaded. Load impedance: Less than 10 kΩ

〔Adjustment Sequence〕

Make the electrical adjustment in the following sequences.



8-1. POWER SUPPLY CHECK (MA-246 BOARD)

Mode	E-E
Measurement Equipment	Digital voltmeter
D 6V check	
Measurement Point	Pin ④ of CN104
Specified Value	5.9 ± 0.05 Vdc
MTR 12V check	
Measurement Point	Pin ⑨, ⑩ of CN104
Specified Value	12.3 ± 0.3 Vdc
SW 12V check	
Measurement Point	Pin ② of IC901
Specified Value	12 ± 0.3 Vdc
SW 9V check	
Measurement Point	Pin ⑦ of CN601
Specified Value	9.0 ± 0.02 Vdc
AN 5V check	
Measurement Point	Pin ③ of CN601
Specified Value	5.2 ± 0.02 Vdc
+35V check	
Measurement Point	Pin ⑨ of CN103
Specified Value	38 ± 3 Vdc
-30V check	
Measurement Point	Pin ③ of CN104
Specified Value	−27 ± 2.5 Vdc
DC 4V check	
Measurement Point	Between Pin ① and Pin ② of CN104
Specified Value	4.4 ± 0.3 Vdc

Checking Method:

1) Confirm that each voltage meets the specified value.

8-2. SERVO SYSTEM ADJUSTMENT

1. Switching position adjustment (MA-246 board)

Mode	Playback
Signal	Alignment tape, color bar (SP mode)
Measurement Point	CH1: Pin ㉞ of IC101 (V OUT) CH2: Pin ⑲ of CN601 (RF SWP)
Measurement Equipment	Oscilloscope
Adjustment Element	RV502
Specified Value	410 ± 32 μsec (6.5 ± 0.5H)

Adjustment Method:

1) Press the tracking buttons ▼ and ▲ at a time.
2) Adjust for 410 ± 32 μsec (6.5 ± 0.5) using RV502.

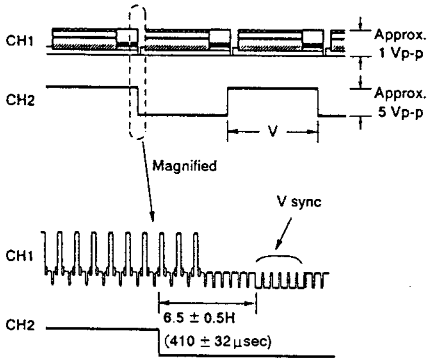


Fig. 8-3. Switching position adjustment

8-3. VIDEO ADJUSTMENT

Adjust the video system in the following sequences as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync and color burst signals meet requirements specified at set up of adjustment shown in Fig. 8-2.

- Make adjustment with switches set to following positions.

TV/VTR .... VTR

PICTURE CONTROL .... STANDARD

〔Adjustment Sequences〕

1) Crystal oscillation frequency confirmation
2) Playback Y signal level adjustment
3) Sync AGC adjustment
4) Sync tip carrier set and deviation adjustment
5) Recording chroma signal level adjustment
6) Y signal recording level check

1. Crystal oscillation frequency confirmation (MA-246 board)

Mode	Playback
Signal	Any tape
Measurement Point	Pin ㉑ of IC101
Measurement Equipment	Frequency counter, Oscilloscope
Specified Value	7159090 ± 120 Hz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Confirmation Method:

1) Make sure that the frequency is 7159090 ± 120 Hz.
2) Make sure that the amplitude is 380 ± 100 mVp-p.

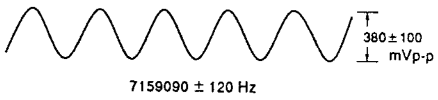


Fig. 8-4.

2. Playback Y signal level adjustment (MA-246 board)

Mode	Playback
Signal	Alignment tape, color bar (SP mode)
Measurement Point	Pin ㉞ of IC101 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV105
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment PICTURE CONTROL STANDARD condition.

Adjustment Method:

1) Adjust for 2.00 ± 0.02 Vp-p using RV105.

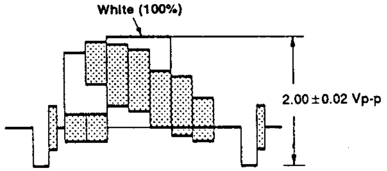


Fig. 8-5.

3. Sync AGC adjustment (MA-246 board)

Mode	Recording or EE
Signal	Color bar
Measurement Point	Pin ④ of IC101
Measurement Equipment	Oscilloscope
Adjustment Element	RV103
Specified Value	0.50 ± 0.04 Vp-p

Adjustment Method:

1) Adjust for 0.50 ± 0.04 Vp-p using RV103.

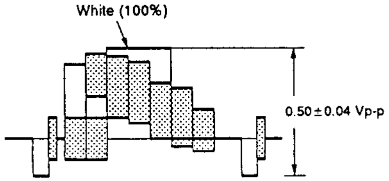


Fig. 8-6.

4. Sync tip carrier set and deviation adjustment (MA-246 board)

Before starting this adjustment, be sure to check that "2. playback Y signal level adjustment" has been completed.

Sync tip carrier set adjustment	
Mode	E-E
Signal	No signal
Measurement Point	Pin ㊵ of IC101 (REC Y)
Measurement Equipment	Frequency counter
Adjustment Element	RV102
Specified Value	3.40 ± 0.05 MHz
Deviation adjustment	
Mode	Recording and playback
Signal	Color bar
Measurement Point	Pin ㉞ of IC101 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV104
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment PICTURE CONTROL STANDARD condition.

Adjustment Method:

1) Make no signal state and select the E-E mode.
2) Connect the frequency counter to the Pin ㊵ of IC101 and adjust for 3.40 ± 0.05 MHz using RV102.
3) Input the color bar signal to make recording.
4) Playback the recorded tape portion and check the playback Y signal level of the Pin ㉞ of IC101.
   Specification: Should be 2.00 ± 0.02 Vp-p.
5) If does not meet the specification, repeat 1) to 4) after adjusting RV104.

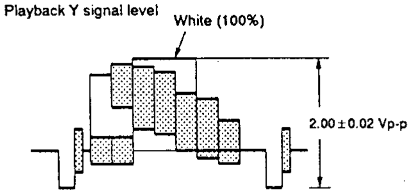


Fig. 8-7.

5. Recording chroma signal level adjustment (MA-246 board)

Mode	E-E
Signal	Color bar
Measurement Point	Emitter of Q120 (REC C)
Measurement Equipment	Oscilloscope
Adjustment Element	RV106
Specified Value	160± 10 mVp-p

Adjustment Method:

1) Adjust the color bar "red" level to 160 ± 10 mVp-p using RV106.

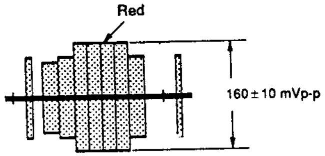


Fig. 8-8.

6. Y signal recording level check (MA-246 board)

Mode	SP mode recording
Signal	No signal
Measurement Point	Emitter of Q102 (Y REC)
Measurement Equipment	Oscilloscope
Specified Value	100±70 mVp-p

Checking Method:

1) Confirm that the REC Y level is 100±70 mVp-p.

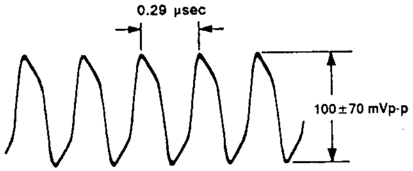
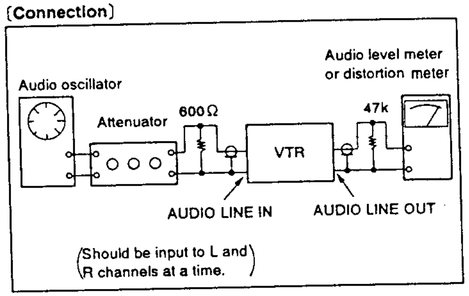


Fig. 8-9.

8-4. AUDIO SYSTEM ADJUSTMENT

〔Connection〕



(Should be input to L and R channels at a time.)

Fig. 8-10.

8-4-1. HiFi Audio System Adjustment

- Make adjustment with switches set to following positions.

TV/VTR .... VTR

Make adjustment in the SP mode.

〔Adjustment Sequence〕

1) ACE head adjustment
   ...See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".
2) VCO fo adjustment
3) Band pass filter fo adjustment
4) HF switching position adjustment
5) Deviation adjustment
6) Playback output level check
7) E-E output level check
8) Recording bias adjustment
9) Overall level characteristic and distortion factor check
10) Overall S/N check

1. ACE head adjustment

See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ"

2. VCO fo adjustment (HF-27 board)

The measurement point of the right channel is indicated in [ ].

Mode	Recording
Signal	No signal
Measurement Equipment	Frequency counter
1.3 MHz adjustment	
Measurement Equipment	Pin ㉞ of IC201
Adjustment Element	RV206
Specified Value	1.3±0.001 MHz
1.7 MHz adjustment	
Measurement Point	Pin ㊼ of IC201
Adjustment Element	RV202
Specified Value	1.7±0.001 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Adjustment Method:

1) Connect the frequency counter to Pin ㉞ [㊼] of IC201.
2) Adjust for 1.3±0.001 MHz [1.7±0.001 MHz] using RV206 [RV202].

3. Band-pass filter fo adjustment (HF-27 board)

Mode	Playback
Signal	Tape recorded in SP mode
Measurement Point	Pin ⑯ of CN202
Measurement Equipment	Oscilloscope
Adjustment Element	RV204
Specified Value	A=B

Connection:

1) 1.505MHz sine-wave from the signal generator to Pin ⑯ of CN202.

Adjustment Method:

1) Adjust so that the signal level of Pin ⑱ of CN202 and ㊽ of IC201 are equal using RV204.

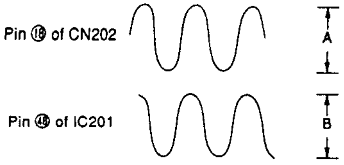


Fig. 8-11.

4. VCO frequency adjustment (MA-246 board)

Mode	Playback
Signal	Color bar
Measurement Point	Pin ㉖ of IC601
Measurement Equipment	Oscilloscope
Adjustment Element	CT601
Specified Value	+2.4V~+2.5V

5. HF Switching position adjustment (MA-246 board)

Mode	Playback
Signal	Alignment tape : HiFi 400Hz (SP mode : color bar)
Measurement Point	CH1 : Pin ⑲ of CN601 (AF RF) CH2 : Pin ① of CN303 (RF SWP)
Measurement Equipment	Oscilloscope TIME/DIV : 10 μsec
Adjustment Element	RV501
Specified Value	Be sure that there is no lacking portion.

Adjustment Method:

1) Press tracking buttons ▲ and ▼ at a time.
2) Correct the lacking portion of RF signal using RV501.
3) Minimize the drop out section of the RF singnal. Check that there is no crackling sound.

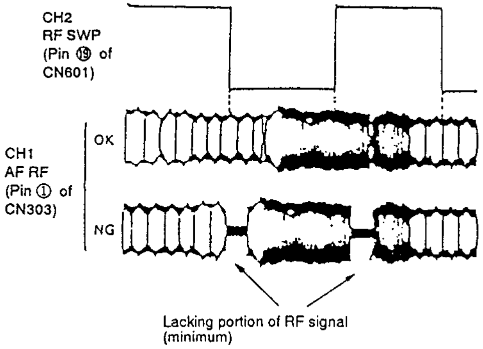


Fig. 8-12.

6. Deviation adjustment (HF-27 board)

The adjustment element of the right channel is indicated in [ ].

Mode	Playback
Signal	Alignment tape
Measurement Point	AUDIO LINE OUT left [right]
Measurement Equipment	Audio level meter
Adjustment Element	RV207 [RV203]
Specified Value	-7.5 ± 0.2 dBs

Adjustment Method:

1) Make sure that "STEREO" segment lights on the fluorescent display.
2) Adjust left [right] channel audio output level to -7.5 ± 0.2 dBs using RV207 [RV203].

7. Playback output level check

Mode	Playback
Signal	Alignment tape, color bar
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	−7.5±2 dBs

Confirmation Method:

1) Playback 1 kHz portion and make sure that AUDIO LINE OUT signal level is −7.5±2 dBs.

8. E-E output level check

Mode	E-E
Signal	400 Hz, -7.5 dBs
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	-7.5 ± 2 dBs

Confirmation Method:

1) Input signal of 400 Hz, -7.5 dBs to AUDIO LINE IN.
2) Make sure that AUDIO LINE OUT signal level is -7.5 ± 2 dBs.

9. Recording bias adjustment (MA-246 board)

Mode	Recording and playback (SP mode)
Signal	Alignment tape
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Adjustment Element	RV301
Specified Value	0±3 dB

Note: Tape path adjustment should have been completed.

Adjustment Method:

1) Input signal of 400 Hz, −30 dBs.
2) Make recording.
3) Set the AUDIO LINE IN signal to 7 kHz, −30 dBs and make recording.
4) Playback a recorded portion and measure output levels at 400 Hz and 7 kHz.
5) Confirm that the 7 kHz playback signal level is within a range of 0 ± 3 dB against the 400 Hz playback signal level. When beyond this range, adjust RV301 and repeat the steps (1) through (5).

10. Overall level characteristic and distortion factor check

Mode	Recording and playback (SP mode)
Signal	AUDIO LINE OUT terminal
Measurement Point	Audio level meter and distortion meter
Measurement Equipment	Playback level:-7.5 ± 2 dBs
Specified Value	Distortion factor: 4% or less

Adjustment Method:

1) Input audio signal of 400 Hz, -7.5 dBs to AUDIO LINE IN.
2) Make recording.
3) Playback the recorded portion.
4) Make sure that playback level is -7.5 ± 2 dBs.
5) Make sure that distortion factor is within 4%.

11. Overall S/N check

Mode	Recording and playback (SP mode)
Signal	No signal
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	Less than -46 dBs

Confirmation Method:

1) Make no signal input.
2) Make recording.
3) Playback the recorded portion.
4) Confirm that the noise level is less than -46 dBs.

SVO-1500P (PAL)

During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 8-16.

Necessary items and indications for total adjustment of electric circuit of this unit will be described in this chapter.

〔Instruments to be Used〕

1) Color TV
2) Single or dual trace type oscilloscope, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (4 digits or more)
4) PAL pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion meter
10) PAL Alignment tape
    Part code: H7099052H (MH-2)
11) SECAM pattern generator
12) Hi-Fi alignment tape

〔Connection〕

Unless otherwise specified, connect and adjust the measurement equipment as follows.

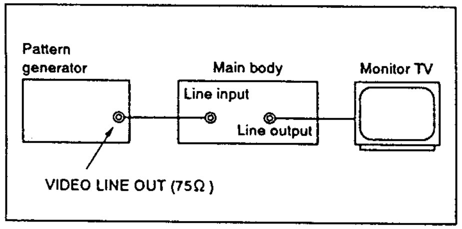


Fig. 8-1.

〔Set-up for Adjustment〕

The video signal from the pattern generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscope to the video input terminal on the MA-246 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3V, respectively, and that the level ratio of the burst signal and "red signal" are 0.30 : 0.66. Fig. 8-2. shows video signals (PAL color bars) used in adjusting the electrical adjustment.

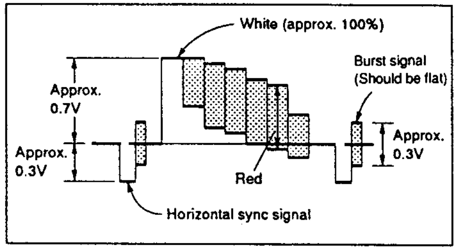


Fig. 8-2. PAL Color bar signal of pattern generator

〔Alignment Tape (MH-2)〕

	Mode	Time	video signal	Audio signal
1	SP	Ten minutes	Stair-step	6 kHz
2		Five minutes	——	3 kHz
3		Ten minutes	Color bar	1 kHz
4		Three minutes	RF sweep	

〔Specified Input/Output Level Impedance〕

Input/output terminal

VIDEO LINE IN — Pin jack
Input signal: 1 Vp-p, 75Ω , unbalanced
Sync negative

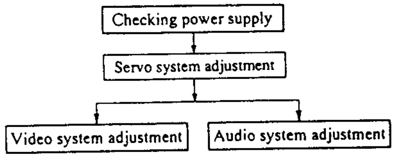
VIDEO LINE OUT — Pin jack
Output signal: 1 Vp-p, 75Ω , unbalanced
Sync negative

AUDIO LINE IN — Pin jack
Input level: –7.5 dBs
(0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ

AUDIO LINE OUT — Pin jack
Specified output: –7.5 dBs
At 47 kΩ loaded.
Load impedance: More than 10 kΩ

〔Adjustment Sequence〕

Make the electrical adjustment in the following sequences.



8-1. POWER SUPPLY CHECK (MA-246 BOARD)

Mode	E-E
Measurement Equipment	Digital voltmeter
D 6V check	
Measurement Point	Pin ④ of CN104
Specified Value	5.9 ± 0.05 Vdc
MTR 12V check	
Measurement Point	Pin ⑨, ⑩ of CN104
Specified Value	12.3 ± 0.3 Vdc
SW 12V check	
Measurement Point	Pin ② of IC901
Specified Value	12 ± 0.3 Vdc
SW 9V check	
Measurement Point	Pin ⑦ of CN601
Specified Value	9.0 ± 0.02 Vdc
AN 5V check	
Measurement Point	Pin ③ of CN601
Specified Value	5.2 ± 0.02 Vdc
+35V check	
Measurement Point	Pin ⑨ of CN103
Specified Value	38 ± 3 Vdc
-30V check	
Measurement Point	Pin ③ of CN104
Specified Value	−27 ± 2.5 Vdc
DC 4V check	
Measurement Point	Between Pin ① and Pin ② of CN104
Specified Value	4.4 ± 0.3 Vdc

Checking Method:
1) Confirm that each voltage meets the specified value.

8-2. SERVO SYSTEM ADJUSTMENT

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL

1. Switching position adjustment (MA-246 board)

Mode	Playback
Signal	Alignment tape, Stair step
Measurement Point	CH1: Pin ㉞ of IC101 (V OUT) CH2: Pin ⑲ of CN601 (RF SWP)
Measurement Equipment	Oscilloscope
Adjustment Element	RV502
Specified Value	416 ± 30 μsec (6.5 ± 0.5H)

Adjustment Method:
1) Press the tracking buttons ▼ and ▲ at a time.
2) Adjust for 416 ± 30 μsec (6.5 ± 0.5) using RV502.

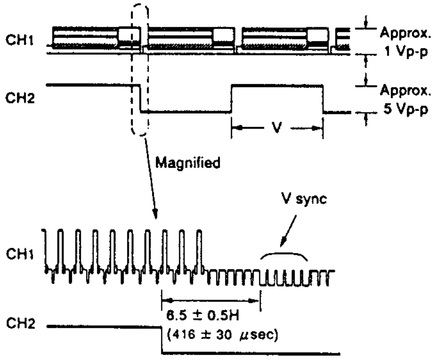


Fig. 8-3. Switching position adjustment

8-3. VIDEO ADJUSTMENT

Adjust the video system in the following sequences as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync and color burst signals meet requirements specified at set up of adjustment shown in Fig. 8-2.

- Make adjustment with switches set to following positions.
  COLOR SYSTEM ....PAL
  PICTURE CONTROL............STANDARD

[Adjustment Sequences]
1) Crystal oscillation frequency confirmation
2) Playback Y signal level adjustment
3) Sync AGC adjustment
4) Sync tip carrier set and deviation adjustment
5) Recording chroma signal level adjustment
6) Y signal recording level check
7) AFC adjustment

1. Crystal oscillation frequency confirmation (MA-246 board)

Mode	Playback
Signal	Any tape
Measurement Point	Pin ㉑ of IC101
Measurement Equipment	Frequency counter, Oscilloscope
Specified Value	8867238 ± 120 Hz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Confirmation Method:
1) Make sure that the frequency is 8867238 ± 120 Hz.
2) Make sure that the amplitude is 380 ± 100 mVp-p.

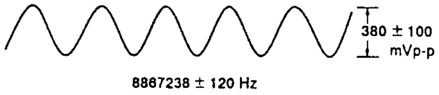


Fig. 8-4.

2. Playback Y signal level adjustment (MA-246 board)

Mode	Playback
Signal	Alignment tape, color bar
Measurement Point	Pin ㉞ of IC101 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV105
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment PICTURE CONTROL STANDARD condition.

Adjustment Method:
1) Adjust for 2.00 ± 0.02 Vp-p using RV105.

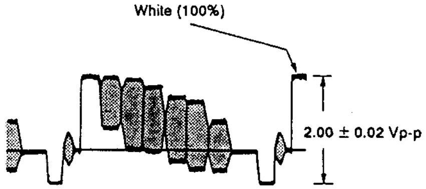


Fig. 8-5.

3. Sync AGC adjustment (MA-246 board)

Mode	Recording or EE
Signal	PAL Color bar
Measurement Point	Pin ④ of IC101
Measurement Equipment	Oscilloscope
Adjustment Element	RV103
Specified Value	0.50 ± 0.04 Vp-p

Adjustment Method:
1) Adjust for 0.50 ± 0.04 Vp-p using RV103.

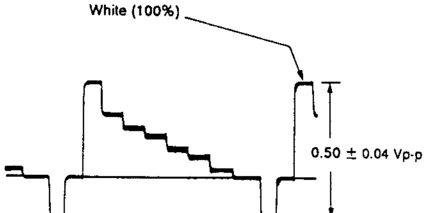


Fig. 8-6.

4. Sync tip carrier set and deviation adjustment (MA-246 board)

Before starting this adjustment, be sure to check that "2. playback Y signal level adjustment" has been completed.

Sync tip carrier set adjustment	
Mode	E-E
Signal	No signal
Measurement Point	Pin ㊵ of IC101 (REC Y)
Measurement Equipment	Frequency counter
Adjustment Element	RV102
Specified Value	3.80 ± 0.05 MHz
Deviation adjustment	
Mode	Recording and playback
Signal	PAL color bar
Measurement Point	Pin ㉞ of IC101 (V OUT)
Measurement Equipment	Oscilloscope
Adjustment Element	RV104
Specified Value	2.00 ± 0.02 Vp-p

Note: Make this adjustment PICTURE CONTROL STANDARD condition.

Adjustment Method:
1) Make no signal state and select the E-E mode.
2) Connect the frequency counter to the Pin ㊵ of IC101 and adjust for 3.80 ± 0.05 MHz using RV102.
3) Input the color bar signal to make recording.
4) Playback the recorded tape portion and check the playback Y signal level of the Pin ㉞ of IC101.
   Specification: Should be 2.00 ± 0.02 Vp-p.
5) If does not meet the specification, repeat 1) to 4) after adjusting RV104.

Playback Y signal level

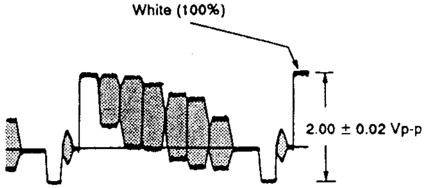


Fig. 8-7.

5. Recording chroma signal level adjustment (MA-246 board)

Mode	E-E
Signal	PAL color bar
Measurement Point	Emitter of Q120 (REC C)
Measurement Equipment	Oscilloscope
Adjustment Element	RV106
Specified Value	160 ± 10 mVp-p

Adjustment Method:

1) Adjust the color bar "red" level to 160 ± 10mVp-p using RV106.

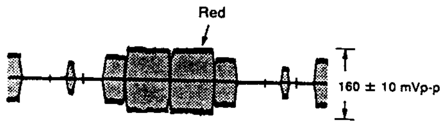


Fig. 8-8.

6. Y signal recording level check (MA-246 board)

Mode	SP mode recording
Signal	No signal
Measurement Point	Emitter of Q102 (Y REC)
Measurement Equipment	Oscilloscope
Specified Value	100 ± 70 mVp-p

Checking Method:

1) Confirm that the REC Y level is 100 ± 70 mVp-p.

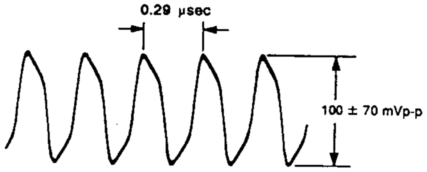


Fig. 8-9.

7. AFC adjustment (MA-246 board)

Mode	E-E
Signal	PAL color bar
Measurement Point	Pin ⑦ of IC103
Measurement Equipment	Frequency counter
Adjustment Element	RV107
Specified Value	15734 ± 50 Hz

Connection:

1) Connect pin ⑮ of IC103 and pin ⑩ (5V) of IC103 with a jumper wire.

Adjustment Method:

1) Adjust for 15734 ± 50 Hz using RV107.

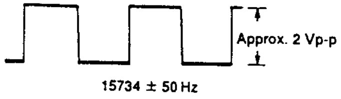


Fig. 8-10.

8-4. AUDIO SYSTEM ADJUSTMENT

[Connection]

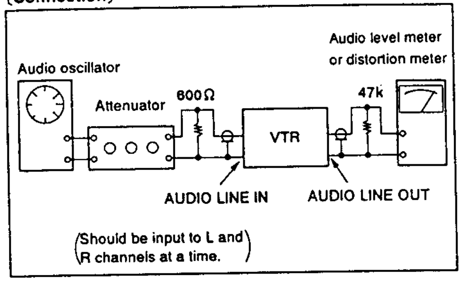


Fig. 8-11.

8-4-1. HiFi Audio System Adjustment

• Make adjustment with switches set to following positions.
COLOR SYSTEM ....PAL
Make adjustment in the SP mode.

[Adjustment Sequence]

1) ACE head adjustment
...See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".
2) VCO fo adjustment
3) Band pass filter fo adjustment
4) HF switching position adjustment
5) Deviation adjustment
6) Playback output level check
7) E-E output level check
8) Recording bias adjustment
9) Overall level characteristic and distortion factor check
10) Overall S/N check

1. ACE head adjustment

See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".

2. VCO fo adjustment (HF-27 board)

The measurement point of the right channel is indicated in [ ].

Setting:
COLOR SYSTEM switch ....NTSC mode

Mode	Recording
Signal	No signal
Measurement Equipment	Frequency counter
1.3 MHz adjustment	
Measurement Equipment	Pin ㉞ of IC201
Adjustment Element	RV206
Specified Value	1.3±0.001 MHz
1.7 MHz adjustment	
Measurement Point	Pin ㊼ of IC201
Adjustment Element	RV202
Specified Value	1.7±0.001 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Adjustment Method:

1) Connect the frequency counter to Pin ㉞ [㊼] of IC201.
2) Adjust for 1.3±0.001 MHz [1.7±0.001 MHz] using RV206 [RV202].

Setting:
COLOR SYSTEM switch ....PAL mode

Mode	Recording
Signal	No signal
Measurement Equipment	Frequency counter
1.4 MHz adjustment	
Measurement Equipment	Pin ㉞ of IC201
Adjustment Element	RV205
Specified Value	1.4±0.001 MHz
1.8 MHz adjustment	
Measurement Point	Pin ㊼ of IC201
Adjustment Element	RV201
Specified Value	1.8±0.001 MHz

8-4. AUDIO SYSTEM ADJUSTMENT

[Connection]

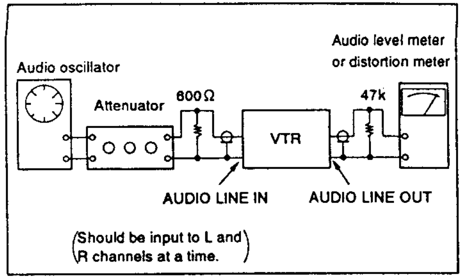


Fig. 8-11.

8-4-1. HiFi Audio System Adjustment

• Make adjustment with switches set to following positions.
COLOR SYSTEM ....PAL
Make adjustment in the SP mode.

[Adjustment Sequence]

1) ACE head adjustment
...See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".
2) VCO fo adjustment
3) Band pass filter fo adjustment
4) HF switching position adjustment
5) Deviation adjustment
6) Playback output level check
7) E-E output level check
8) Recording bias adjustment
9) Overall level characteristic and distortion factor check
10) Overall S/N check

1. ACE head adjustment

See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".

2. VCO fo adjustment (HF-27 board)

The measurement point of the right channel is indicated in [ ].

Setting:
COLOR SYSTEM switch ....NTSC mode

Mode	Recording
Signal	No signal
Measurement Equipment	Frequency counter
1.3 MHz adjustment	
Measurement Equipment	Pin ㉞ of IC201
Adjustment Element	RV206
Specified Value	1.3±0.001 MHz
1.7 MHz adjustment	
Measurement Point	Pin ㊼ of IC201
Adjustment Element	RV202
Specified Value	1.7±0.001 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Adjustment Method:
1) Connect the frequency counter to Pin ㉞ [㊼] of IC201.
2) Adjust for 1.3±0.001 MHz [1.7±0.001 MHz] using RV206 [RV202].

Setting:
COLOR SYSTEM switch ....PAL mode

Mode	Recording
Signal	No signal
Measurement Equipment	Frequency counter
1.4 MHz adjustment	
Measurement Equipment	Pin ㉞ of IC201
Adjustment Element	RV205
Specified Value	1.4±0.001 MHz
1.8 MHz adjustment	
Measurement Point	Pin ㊼ of IC201
Adjustment Element	RV201
Specified Value	1.8±0.001 MHz

7. Playback output level check

Mode	Playback
Signal	Alignment tape
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	−7.5±2 dBs

Confirmation Method:
1) Playback 1 kHz portion and make sure that AUDIO LINE OUT signal level is −7.5±2 dBs.

8. E-E output level check

Mode	E-E
Signal	400 Hz, -7.5 dBs
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	-7.5 ± 2 dBs

Confirmation Method:
1) Input signal of 400 Hz, -7.5 dBs to AUDIO LINE IN.
2) Make sure that AUDIO LINE OUT signal level is -7.5 ± 2 dBs.

9. Recording bias adjustment (MA-246 board))

Mode	Recording and playback (SP mode)
Signal	400 Hz, −30 dBs 7 kHz, −30 dBs
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Adjustment Element	RV301
Specified Value	0 ± 3 dB

Note: Tape path adjustment should have been completed.

Adjustment Method:
1) Input signal of 400 Hz, −30 dBs.
2) Make recording.
3) Set the AUDIO LINE IN signal to 7 kHz, −30 dBs and make recording.
4) Playback a recorded portion and measure output levels at 400 Hz and 7 kHz.
5) Confirm that the 7 kHz playback signal level is within a range of 0 ± 3 dB against the 400 Hz playback signal level. When beyond this range, adjust RV301 and repeat the steps (1) through (5).

10. Overall level characteristic and distortion factor check

Mode	Recording and playback (SP mode)
Signal	AUDIO LINE OUT terminal
Measurement Point	Audio level meter and distortion meter
Measurement Equipment	Playback level:-7.5 ± 2 dBs
Specified Value	Distortion factor: 4% or less

Adjustment Method:
1) Input audio signal of 400 Hz, -7.5 dBs to AUDIO LINE IN.
2) Make recording.
3) Playback the recorded portion.
4) Make sure that playback level is -7.5 ± 2 dBs.
5) Make sure that distortion factor is within 4%.

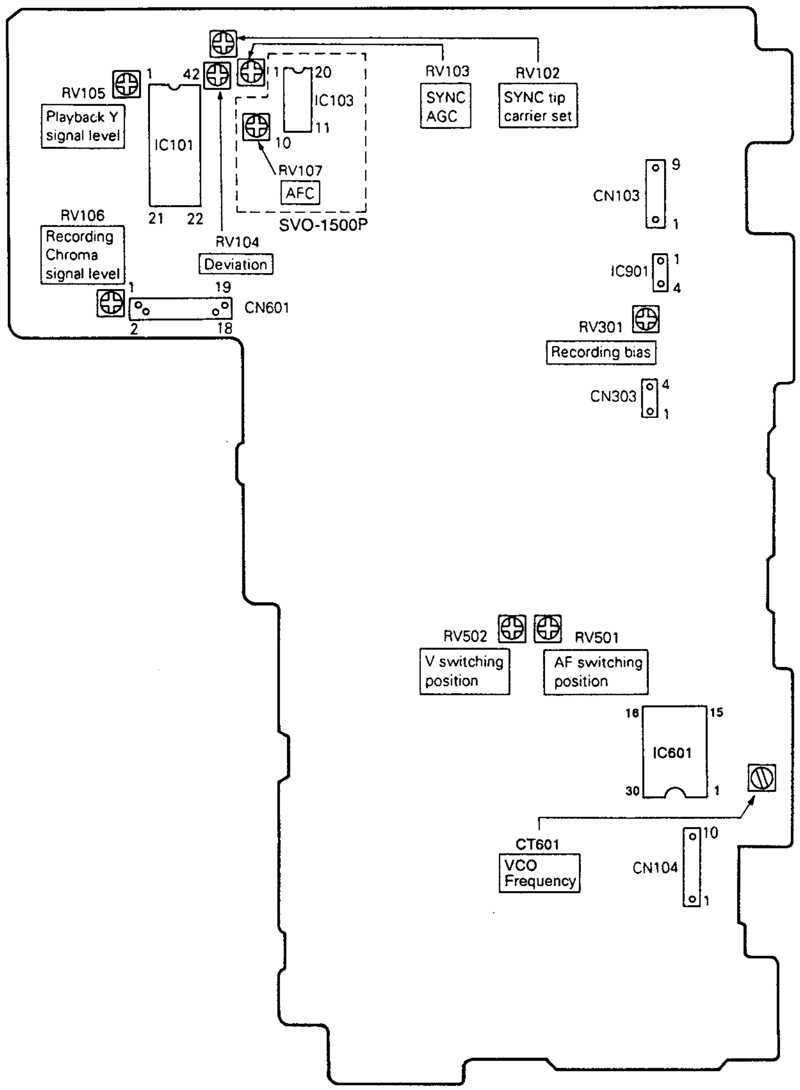
11. Overall S/N check

Mode	Recording and playback (SP mode)
Signal	No signal
Measurement Point	AUDIO LINE OUT terminal
Measurement Equipment	Audio level meter
Specified Value	Less than -46 dBs

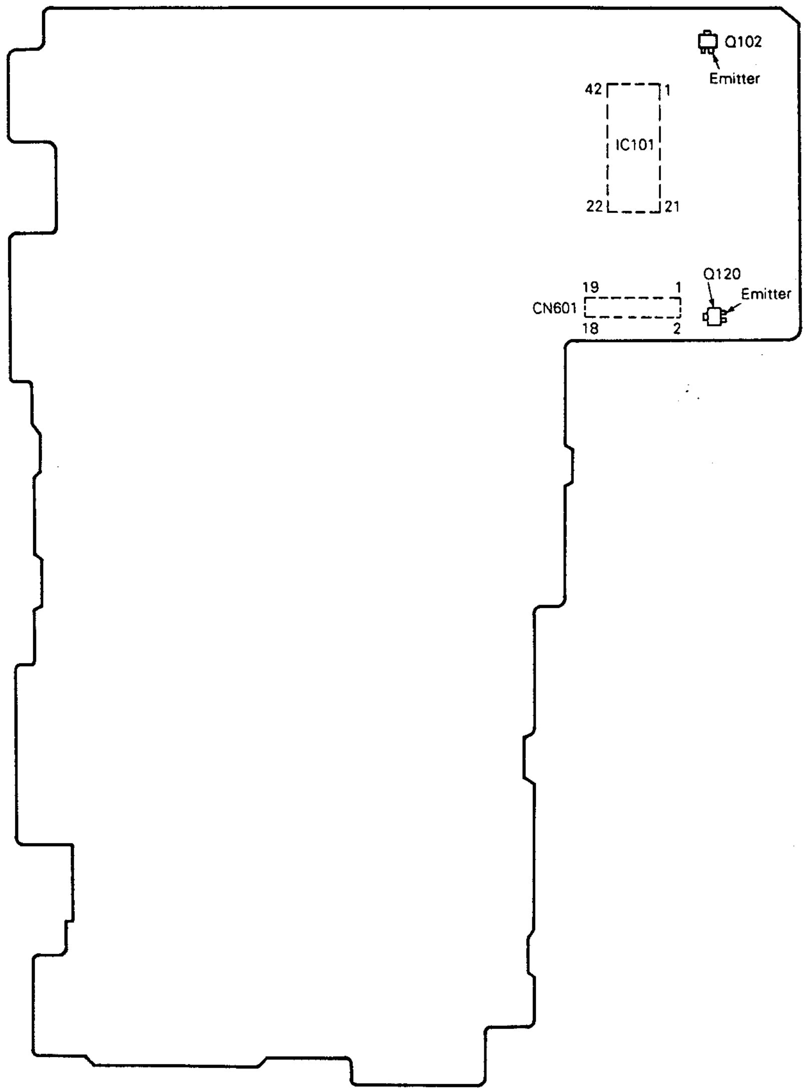
Confirmation Method:
1) Make no signal input.
2) Make recording.
3) Playback the recorded portion.
4) Confirm that the noise level is less than -46 dBs.

8-5. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

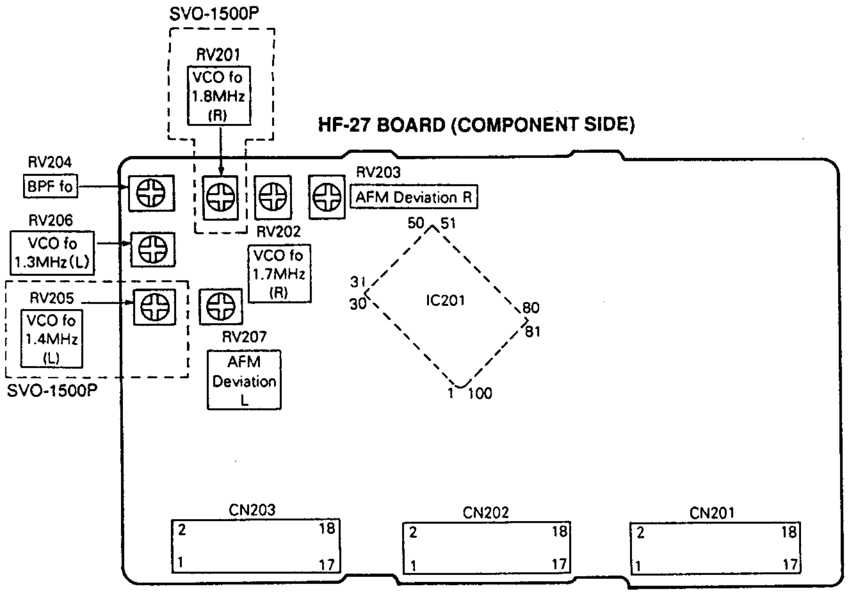
MA-246 BOARD (COMPONENT SIDE)


RV105
Playback Y signal level
IC101
1
42
21
22
RV106
Recording Chroma signal level
RV104
Deviation
1
19
2
18
CN601
1
20
IC103
11
10
RV107
AFC
SVO-1500P
RV103
SYNC AGC
RV102
SYNC tip carrier set
CN103
9
1
IC901
1
4
RV301
Recording bias
CN303
4
1
RV502
V switching position
RV501
AF switching position
16
15
IC601
30
1
CT601
VCO Frequency
CN104
10
1

MA-246 BOARD (CONDUCTOR SIDE)


Q102
Emitter
42
1
IC101
22
21
19
1
CN601
18
2
Q120
Emitter

HF-27 BOARD (COMPONENT SIDE)


SVO-1500P
RV201
VCO fo 1.8MHz (R)
RV204
BPF fo
RV203
AFM Deviation R
RV206
VCO fo 1.3MHz (L)
RV202
VCO fo 1.7MHz (R)
50
51
31
30
IC201
80
81
1
100
RV205
VCO fo 1.4MHz (L)
RV207
AFM Deviation L
SVO-1500P
CN203
CN202
CN201
2
18
1
17
2
18
1
17
2
18
1
17